Author index

Abdel-Fatah, O. M.: *see* Elshafei, A. M., 930
Abu-Reesh, I. and Kargi, F.: Biological responses of hybridoma cells to hydrodynamic shear in an agitated bioreactor, 913
Aeschlimann, A. and von Stocker, U.: Continuous production of lactic acid from whey permeate by *Lactobacillus helveticus* in a cell-recycle reactor, 811
Aldercreutz, P.: Novel biocatalyst for the asymmetric reduction of ketones: Permeabilized cells of *Gluconobacter oxydans*, 9
Alfani, F.: *see* Cantaralla, M., 547
Alföldi, J.: *see* Kery, V., 87
Almeida, J. S.: *see* Çoncalves, L. M. D., 314
Alvaro, G.: *see* Blanco, R. M., 573
Alvaro, G., Fernandez-Lafuente, R., Blanco, R. M., and Guisán, J. M.: Stabilizing effect of penicillin G sulfoxide, a competitive inhibitor of penicillin G acylase: Its practical applications, 210
Ampon, K., Salleh, A. B., Salam, F., Wan Yunus, W. M. Z., Razak, C. N. A., and Basri, M.: Reductive alkylation of lipase, 597
André, G.: *see* Lortie, R., 960
Andrews, B. A.: *see* Cascone, O., 629
Antczak, T.: *see* Antczak, U., 589
Antczak, U., Góra, J., Antczak, T., and Galas, E.: Enzymatic lactonization of 15-hydroxypentadecanoic and 16-hydroxyhexadecanoic acids to macrocyclic lactones, 589
Archambault, J.: Large-scale (20L) culture of surface-immobilized *Catharanthus roseus* cells, 882
Archibald, F. S.: *see* Roy-Arcand, L., 194
Arias-Castro, C.: *see* Rodríguez-Mendiola, M. A., 697
Asenjo, J. A.: *see* Cascone, O., 629; Ventom, A. M., 71
Asther, M.: *see* Bonnarme, P., 727
Ayyangar, N. R.: *see* Bahulekar, R., 858

Babu, P. S. R. and Panda, T.: Studies on improved techniques for immobilizing and stabilizing penicillin amidase associated with *E. coli* cells, 676
Bachhawat, N.: *see* Gowda, L. R., 154
Bahr, K. H., Weisser, H., and Schügerl, K.: Investigations on proteins excreted by the yeast *Hansenula polymorpha* and their influence on brogt foaminess and cell recovery by flotation, 747
Bahulekar, R., Ayyangar, N. R., and Ponrathnam, S.: Polyethyleneimine in immobilization of biocatalysts, 858
Bailey, J. E.: *see* Galazzo, J. L., 363; Hart, R. A., 788
Bajpai, P.: *see* Bajpai, P. K., 359
Bajpai, P. K. and Bajpai, P.: Cultivation and utilization of Jerusalem artichoke for ethanol, single cell protein, and high-fructose syrup production, 359
Ballerini, D.: *see* Fayolle, F., 215
Bar, R.: *see* Goetschel, R., 245
Basri, M.: *see* Ampon, K., 597
Beckman, E. J.: *see* Russell, A. J., 1007
Bhat, S. G.: *see* Gowda, L. R., 154
Bicer, A.: *see* Tukenmez, I., 925
Blanch, H. W.: *see* Guinn, R. M., 320; Miller, D. A., 98
Blanchet, D.: *see* Fayolle, F., 215
Blanco, R. M.: *see* Alvaro, G., 210
Blanco, R. M., Alvaro, G., and Guisán, J. M.: Enzyme reaction engineering: design of peptide synthesis by stabilized trypsin, 573
Bloor, S. and England, R. R.: Elucidation and optimization of the medium constituents controlling antibiotic production by the cyanobacterium *Nostoc muscorum*, 76
Bohnen, M.: *see* Engel, K.-H., 655
Bonnarme, P., Delattre, M., Corrieu, G., and Asther, M.: Peroxidase secretion by pellets or immobilized cells of *Phanerochaete Chrysosporium* BKM-F-1767 and INA-12 in relation to organelle content, 727
Bonte, A.: *see* Somers, W., 997
Boudet, A. M.: *see* Galliano, H., 478
Bozoglü, T. F.: *see* Özilgen, M., 252
Brahimi-Horn, M.-C., Mickelson, C. A., Gaal, A. M., Guglielmino, M. G., and Sparrow, L. G.: Lipolytic activity produced by *Pseudomonas aeruginosa* and *Acinetobacter calcoaceticus* strains grown in wool-scour effluent, 740
Briggs, G.: *see* Collins, M. E., 400
Brooks, S. L., Higgins, I. J., Newman, J. D., and Turner, A. P. F.: Biosensors for process control, 946
Bryan, W. L. and Silman, R. W.: Viability and initial kinetic parameters for dry yeast inocula in batch fementations, 2
Bryers, J. D., Yeh, T., and Schweickart, R. W.: Diauxic metabolism in the methylotrophic yeast *Hansenula polymorpha* during repeated transients in system dilution rate, 412
Buhler, R.: *see* Harkki, A., 227
Buitelaar, R. M., Langenhoff, A. A. M., Heidstra, R., and Tramper, J.: Growth and thiophene production by hairy root cultures of *Tagetes patula* in various two-liquid-phase bioreactors, 487
Buse, R.: *see* Qazi, G. N., 504
Butler, A. J., Hallett, D. S., and Macaskie, L. E.: Phosphatase production by a *Citrobacter* sp. growing in batch culture and use of batch cultures to investigate some limitations in the use of polyacrylamide gel-immobilized cells for product release, 716
Calza, R. E.: *see* Li, X., 622
Cambon, C.: *see* García-Junceda, E., 275
Cantarella, L.: *see* Cantarella, M., 547
Cantarella, M., Cantarella, L., and Alfani, F.: Hydrolytic reactions in two-phase systems. Effect of water-immiscible organic solvents on stability and activity of acid phosphatase, β-glucosidase, and β-fructofuranosidase, 547
Carr, P. W.: *see* Karl, D. W., 708
Carrondo, M. J. T.: *see* Çoncalves, L. M. D., 314
Carter, J. P. and Lynch, J. M.: Substrate-dependent variation in the protein profile and antigens of *Trichoderma harzianum*, 537
Casas, L.: *see* Castillo, E., 127
Cascone, O., Andrews, B. A., and Asenjo, J. A.: Partitioning and purification of thaumatin in aqueous two-phase systems, 629
Castelhano, A.: *see* Gour-Salin, B. J., 408
Castillo, E., Rodríguez, M., Casas, L., Quintero, R., and López-Munguia, A.: Design of two immobilized cell catalysts by entrapment on gelatin: Internal diffusion aspects, 127
Cejudo, F. J.: *see* de la Vega, M. G., 267
Çelik, M.: *see* Özilgen, M., 252
Chandra, T. S.: *see* Murty, M. V. S., 430
Chang, H. N.: *see* Lee, C. Y., 53
Chen, A. H. C., Dosoretz, C. G., and Grethlein, H. E.: Ligninase production by immobilized cultures of *Phanerochaete chrysosporium* grown under nitrogen-sufficient conditions, 404
Cheryan, M.: *see* Mehaia, M. A., 257
Chien, C.-H., Wei, Y.-H., Shaw, J.-F.: Immobilized enzyme system for determination of sialic acid in serum or urine, 45
Chopra, C. L.: *see* Qazi, G. N., 504
Christakopoulos, P., Koullas, D. P., Kekos, D., Koukios, E. G., and Macris, B. J.: Direct conversion of straw to ethanol by *Fusarium oxysporum:* Effect of cellulose crystallinity, 272
Cimerman, A.: *see* Perdih, A., 848
Clark, D. S.: *see* Guinn, R. M., 320
Clauti, G.: *see* Šunjic, V., 344
Cliffe, K. C.: *see* Leckie, F., 296; Leckie, F., 801
Cochet, N.: Cellulases of *Trichoderma reesei:* influence of culture conditions upon the enzymatic profile, 104
Collins, M. E., Briggs, G., Sawyer, C., Sheffield, P., and Connerton, I. F.: An inducible gene expression system for *Neurospora crassa*, 400
Connelly, I. C., Filho, E. X. F., Healy, A.-M., Fleming, M., Griffin, T. O., Mayer, F., and Coughlan, M. P.: Novel carbohydrase "complex" from

Author index

Abdel-Fatah, O. M.: *see* Elshafei, A. M., 930
Abu-Reesh, I. and Kargi, F.: Biological responses of hybridoma cells to hydrodynamic shear in an agitated bioreactor, 913
Aeschlimann, A. and von Stocker, U.: Continuous production of lactic acid from whey permeate by *Lactobacillus helveticus* in a cell-recycle reactor, 811
Aldercreutz, P.: Novel biocatalyst for the asymmetric reduction of ketones: Permeabilized cells of *Gluconobacter oxydans*, 9
Alfani, F.: *see* Cantaralla, M., 547
Alföldi, J.: *see* Kery, V., 87
Almeida, J. S.: *see* Çoncalves, L. M. D., 314
Alvaro, G.: *see* Blanco, R. M., 573
Alvaro, G., Fernandez-Lafuente, R., Blanco, R. M., and Guisán, J. M.: Stabilizing effect of penicillin G sulfoxide, a competitive inhibitor of penicillin G acylase: Its practical applications, 210
Ampon, K., Salleh, A. B., Salam, F., Wan Yunus, W. M. Z., Razak, C. N. A., and Basri, M.: Reductive alkylation of lipase, 597
André, G.: *see* Lortie, R., 960
Andrews, B. A.: *see* Cascone, O., 629
Antczak, T.: *see* Antczak, U., 589
Antczak, U., Góra, J., Antczak, T., and Galas, E.: Enzymatic lactonization of 15-hydroxypentadecanoic and 16-hydroxyhexadecanoic acids to macrocyclic lactones, 589
Archambault, J.: Large-scale (20L) culture of surface-immobilized *Catharanthus roseus* cells, 882
Archibald, F. S.: *see* Roy-Arcand, L., 194
Arias-Castro, C.: *see* Rodríguez-Mendiola, M. A., 697
Asenjo, J. A.: *see* Cascone, O., 629; Ventom, A. M., 71
Asther, M.: *see* Bonnarme, P., 727
Ayyangar, N. R.: *see* Bahulekar, R., 858

Babu, P. S. R. and Panda, T.: Studies on improved techniques for immobilizing and stabilizing penicillin amidase associated with *E. coli* cells, 676
Bachhawat, N.: *see* Gowda, L. R., 154
Bahr, K. H., Weisser, H., and Schügerl, K.: Investigations on proteins excreted by the yeast *Hansenula polymorpha* and their influence on brogt foaminess and cell recovery by flotation, 747
Bahulekar, R., Ayyangar, N. R., and Ponrathnam, S.: Polyethyleneimine in immobilization of biocatalysts, 858
Bailey, J. E.: *see* Galazzo, J. L., 363; Hart, R. A., 788
Bajpai, P.: *see* Bajpai, P. K., 359
Bajpai, P. K. and Bajpai, P.: Cultivation and utilization of Jerusalem artichoke for ethanol, single cell protein, and high-fructose syrup production, 359
Ballerini, D.: *see* Fayolle, F., 215
Bar, R.: *see* Goetschel, R., 245
Basri, M.: *see* Ampon, K., 597
Beckman, E. J.: *see* Russell, A. J., 1007
Bhat, S. G.: *see* Gowda, L. R., 154
Bicer, A.: *see* Tukenmez, I., 925
Blanch, H. W.: *see* Guinn, R. M., 320; Miller, D. A., 98
Blanchet, D.: *see* Fayolle, F., 215
Blanco, R. M.: *see* Alvaro, G., 210
Blanco, R. M., Alvaro, G., and Guisán, J. M.: Enzyme reaction engineering: design of peptide synthesis by stabilized trypsin, 573
Bloor, S. and England, R. R.: Elucidation and optimization of the medium constituents controlling antibiotic production by the cyanobacterium *Nostoc muscorum*, 76
Bohnen, M.: *see* Engel, K.-H., 655
Bonnarme, P., Delattre, M., Corrieu, G., and Asther, M.: Peroxidase secretion by pellets or immobilized cells of *Phanerochaete Chrysosporium* BKM-F-1767 and INA-12 in relation to organelle content, 727
Bonte, A.: *see* Somers, W., 997
Boudet, A. M.: *see* Galliano, H., 478
Bozoglü, T. F.: *see* Özilgen, M., 252
Brahimi-Horn, M.-C., Mickelson, C. A., Gaal, A. M., Guglielmino, M. G., and Sparrow, L. G.: Lipolytic activity produced by *Pseudomonas aeruginosa* and *Acinetobacter calcoaceticus* strains grown in wool-scour effluent, 740
Briggs, G.: *see* Collins, M. E., 400
Brooks, S. L., Higgins, I. J., Newman, J. D., and Turner, A. P. F.: Biosensors for process control, 946
Bryan, W. L. and Silman, R. W.: Viability and initial kinetic parameters for dry yeast inocula in batch fementations, 2
Bryers, J. D., Yeh, T., and Schweickart, R. W.: Diauxic metabolism in the methylotrophic yeast *Hansenula polymorpha* during repeated transients in system dilution rate, 412
Buhler, R.: *see* Harkki, A., 227
Buitelaar, R. M., Langenhoff, A. A. M., Heidstra, R., and Tramper, J.: Growth and thiophene production by hairy root cultures of *Tagetes patula* in various two-liquid-phase bioreactors, 487
Buse, R.: *see* Qazi, G. N., 504
Butler, A. J., Hallett, D. S., and Macaskie, L. E.: Phosphatase production by a *Citrobacter* sp. growing in batch culture and use of batch cultures to investigate some limitations in the use of polyacrylamide gel-immobilized cells for product release, 716
Calza, R. E.: *see* Li, X., 622
Cambon, C.: *see* García-Junceda, E., 275
Cantarella, L.: *see* Cantarella, M., 547
Cantarella, M., Cantarella, L., and Alfani, F.: Hydrolytic reactions in two-phase systems. Effect of water-immiscible organic solvents on stability and activity of acid phosphatase, β-glucosidase, and β-fructofuranosidase, 547
Carr, P. W.: *see* Karl, D. W., 708
Carrondo, M. J. T.: *see* Çoncalves, L. M. D., 314
Carter, J. P. and Lynch, J. M.: Substrate-dependent variation in the protein profile and antigens of *Trichoderma harzianum*, 537
Casas, L.: *see* Castillo, E., 127
Cascone, O., Andrews, B. A., and Asenjo, J. A.: Partitioning and purification of thaumatin in aqueous two-phase systems, 629
Castelhano, A.: *see* Gour-Salin, B. J., 408
Castillo, E., Rodríguez, M., Casas, L., Quintero, R., and López-Munguia, A.: Design of two immobilized cell catalysts by entrapment on gelatin: Internal diffusion aspects, 127
Cejudo, F. J.: *see* de la Vega, M. G., 267
Çelik, M.: *see* Özilgen, M., 252
Chandra, T. S.: *see* Murty, M. V. S., 430
Chang, H. N.: *see* Lee, C. Y., 53
Chen, A. H. C., Dosoretz, C. G., and Grethlein, H. E.: Ligninase production by immobilized cultures of *Phanerochaete chrysosporium* grown under nitrogen-sufficient conditions, 404
Cheryan, M.: *see* Mehaia, M. A., 257
Chien, C.-H., Wei, Y.-H., Shaw, J.-F.: Immobilized enzyme system for determination of sialic acid in serum or urine, 45
Chopra, C. L.: *see* Qazi, G. N., 504
Christakopoulos, P., Koullas, D. P., Kekos, D., Koukios, E. G., and Macris, B. J.: Direct conversion of straw to ethanol by *Fusarium oxysporum:* Effect of cellulose crystallinity, 272
Cimerman, A.: *see* Perdih, A., 848
Clark, D. S.: *see* Guinn, R. M., 320
Clauti, G.: *see* Šunjic, V., 344
Cliffe, K. C.: *see* Leckie, F., 296; Leckie, F., 801
Cochet, N.: Cellulases of *Trichoderma reesei:* influence of culture conditions upon the enzymatic profile, 104
Collins, M. E., Briggs, G., Sawyer, C., Sheffield, P., and Connerton, I. F.: An inducible gene expression system for *Neurospora crassa*, 400
Connelly, I. C., Filho, E. X. F., Healy, A.-M., Fleming, M., Griffin, T. O., Mayer, F., and Coughlan, M. P.: Novel carbohydrase "complex" from

solid-state cultures of the aerobic fungus *Penicillium capsulatum*, 470
Connelly, I. C. and Coughlan, M. P.: Isolation and characterization of two endo-β-glucanases from solid-state cultures of the aerobic fungus *Penicillium capsulatum*, 462
Connerton, I. F.: *see* Collins, M. E., 400
Corrieu, G.: *see* Bonnarme, P., 727
Coughlan, M. P.: *see* Connelly, I. C., 462; Connelly, I. C., 470
Cowan, D. A.: *see* Owusu, R. K., 158
Craig, Jr., J. C.: *see* Taylor, F., 956
Crawford, D. L.: *see* Paszczynski, A., 378
Crawford, R. L.: *see* Paszczynski, A., 378
Cresswell, R.: *see* Rodríguez-Mendiola, M. A., 697

Dalmia, B. K. and Nikolov, Z. L.: Characterization of glucoamylase adsorption to raw starch, 982
Dautzenberg, H.: *see* Mansfeld, J., 240
Davey, M. R.: *see* King, A. T., 148; Starkey, M. P., 661
Debeire, P.: *see* Pellerin, P., 617
de Bont, J. A. M.: *see* Weijers, C. A. G. M., 306
Delattre, M.: *see* Bonnarme, P., 727
de la Vega, M. G., Cejudo, F. J., and Paneque, A.: Purification and properties of an extracellular invertase from *Azotobacter chroococcum*, 267
De Ley, J.: *see* Heyndrickx, M., 893
De Vos, P.: *see* Heyndrickx, M., 893
DiGrazia, L.: *see* Šunjic, V., 344
Dobe, M.: *see* Engel, K.-H., 655
Dordick, J. S.: *see* Popp, J. L., 964
Dosoretz, C. G.: *see* Chen, A. H. C., 404
D'Souza, S. F.: *see* Kamath, N., 935
D'Souza, S. F. and Melo, J. S.: A method for the preparation of coimmobilizates by adhesion using polyethylenimine, 508
du Preez, J. C.: *see* van Zyl, C., 82

Ebara, K.: *see* Ushio, K., 834
Elliott, T. J.: *see* Stephens, S. K., 976
Elshafei, A. M. and Abdel-Fatah, O. M.: Nonphosphorolytic pathway for D-galactonate catabolism in *Aspergillus terreus*, 930
Enfors, S.-O.: *see* Köhler, K., 204
Engel, K.-H.: *see* Heidlas, J., 817
Engel, K.-H., Bohnen, M., and Dobe, M.: Lipase-catalysed reactions of chiral hydroxyacid esters: competition of esterification and transesterification, 655
England, R. R.: *see* Bloor, S., 76

Fayolle, F., Marchal, R., Monot, F., Blanchet, D., and Ballerini, D.: An example of production of natural esters: Synthesis of butyl butyrate from wheat flour, 215
Fenning, T.: *see* Starkey, M. P., 661
Fernandez-Lafuente, R.: *see* Alvaro, G., 210
Fernandez-Lafuente, R., Rosell, C. M., and Guisan, J. M.: Enzyme reaction engineering: synthesis of antibiotics catalyzed by stabilized penicillin G acylase in the presence of organic cosolvents, 898
Filho, E. X. F.: *see* Connelly, I. C., 470
Flaschel, E.: *see* Moresoli, C., 703
Fleming, M.: *see* Connelly, I. C., 470
Flickinger, M. C.: *see* Karl, D. W., 708
Förster, M.: *see* Mansfeld, J., 240
Frame, K. K. and Hu, W.-S.: Comparison of growth kinetics of producing and nonproducing hybridoma cells in batch culture, 690
Franssen, M. C. R.: *see* Janssen, A. E. M., 565
Frazer, F. R. and McCaskey, T. A.: Effect of components of acid-hydrolysed hardwood on conversion of D-xylose to 2,3-butanediol by *Klebsiella pneumoniae*, 110
Freeman, A.: *see* Silbiger, E., 869
Fregapane, G., Sarney, D. B., and Vulfson, E. N.: Enzymic solvent-free synthesis of sugar acetal fatty acid esters, 796
Freitag, R., Scheper, T., and Schugerl, K.: Development of a turbidimetric immunoassay for on-line monitoring of proteins in cultivation processes, 969
Friedrich, J.: *see* Perdih, A., 848
Fritscher, C.: *see* Kubicek-Pranz, E. M., 39

Gaal, A. M.: *see* Brahimi-Horn, M.-C., 740
Gainer, J. L.: *see* Harrington, T. J., 610
Galas, E.: *see* Antczak, U., 589
Galazzo, J. L. and Bailey, J. E.: Errata, 363
Galindo, E.: *see* Garcia, J. L., 672
Galliano, H., Gas, G., Seris, J. L., and Boudet, A. M.: Lignin degradation by *Rigidoporus lignosus* involves synergistic action of two oxidizing enzymes: Mn peroxidase and laccase, 478
Ganapathi, B.: *see* Kargi, F., 643
Garcia, J. L., López-Munguia, A., and Galindo, E.: Modeling the non-steady-state response of any enzyme electrode for lactose, 672
García-Junceda, E., Cambon, C., and Vicente, C.: Kinetics and stability of an immobilized orsellinate depside hydrolase in polyacrylamide gel, 275
Gas, G.: *see* Galliano, H., 478
Gelo, M.: *see* Šunjic, V., 344
Gianfreda, L.: *see* Greco, Jr., G., 353
Gibson, T. D., Parker, S. M., and Woodward, J. R.: Purification and characterization of diacetyl reductase from chicken liver and *Streptococcus lactis* and enzymic determination of diacetyl and diketones, 171
Giffhorn, F.: *see* Schneider, K.-H., 332
Gil, G. H., Jones, W. J., and Tornabene, T. G.: Continuous ethanol production in a two-stage, immobilized/suspended-cell bioreactor, 390
Gilbert, D.: *see* Masson, P., 327
Gilkes, N. R.: *see* Ong, E., 59
Goetschel, R., and Bar, R.: Dehydrogenation of hydrocortisone by *Arthrobacter simplex* in a liposomal medium, 245
Goldberg, I.: *see* Neufeld, R. J., 991
Gonçalves, L. M. D., Xavier, A. M. R. B., Almeida, J. S., and Carrondo, M. J. T.: Concomitant substrate and product inhibition kinetics in lactic acid production, 314
Gonzalez, R. R. and Monsan, P.: Purification and some characteristics of β-galactosidase from *Aspergillus fonsecaeus*, 349
Góra, J.: *see* Antczak, U., 589
Gosselin, M.: *see* Pellerin, P., 617
Goszczynksi, S.: *see* Paszczynski, A., 378
Gour-Salin, B. J., Storer, A. C., Castelhano, A., Krantz, A., and Robinson, V.: Inhibition of papain by peptide nitriles: Reactions of external nucleophiles with the thioimidate ester adduct, 408
Gowda, L. R., Bachhawat, N., and Bhat, S. G.: Permeabilization of Bakers' yeast by cetyltrimethylammonium bromide for intracellular enzyme catalysis, 154
Greco, Jr., G., Pirozzi, D., and Gianfreda, L.: Thermal equivalence criteria in the chemical deactivation and stabilization of acid phosphatase, 353
Grethlein, H. E.: *see* Chen, A. H. C., 404
Griffin, T.O.: *see* Connelly, I. C., 470
Grootjen, D. R. J., Jansen, M. L., van der Lans, R. G. J. M., and Luyben, K. Ch. A. M.: Reactors in series for the complete conversion of glucose/xylose mixtures by *Pichia stipitis* and *Saccharomyces cerevisiae*, 828
Grootjen, D. R. J., Meijlink, L. H. H. M., Vleesenbeek, R., van der Lans, R. G. J. M., and Luyben, K. Ch. A. M.: Cofermentation of glucose and xylose with immobilized *Pichia stipitis* in combination with *Saccharomyces cerevisiae*, 530
Grootjen, D. R. J., van der Lans, R. G. J. M., and Luyben, K. Ch. A. M.: Conversion of glucose/xylose mixtures by *Pichia stipitis* under oxygen-limited conditions, 648
Grootjen, D. R. J., Vleesenbeek, R., Windmeijer, M. G. A., van der Lans, R. G. J. M., and Luyben, K. Ch. A. M.: A flocculating strain of *Pichia stipitis* for the conversion of glucose/xylose mixtures, 734
Guespin-Michel, J. R.: *see* Masson, P., 327
Guglielmino, M. G.: *see* Brahimi-Horn, M.-C., 740
Guinn, R. M., Blanch, H. W., and Clark, D. S.: Effect of a water-miscible organic solvent on the kinetic and structural properties of trypsin, 320
Guisán, J. M.: *see* Alvaro, G., 210; Blanco, R. M., 573; Fernandez-Lafuente, R., 898

Hallett, D. S.: *see* Butler, A. J., 716
Hammel, K. E. and Moen, M. A.: Depolymerization of a synthetic lignin *in vitro* by lignin peroxidase, 15

Hampel, W. A.: *see* Kubicek-Pranz, E. M., 39
Harkki, A., Mäntylä, A., Penttilä, M., Muttilainen, S., Bühler, R., Suominen, P., Knowles, J., and Nevalainen, H.: Genetic engineering of *Trichoderma* to produce strains with novel cellulase profiles, 227
Harrington, T. J., Gainer, J. L., and Kirwan, D. J.: Effects of fluid shear on immobilized enzyme kinetics, 610
Hart, R. A. and Bailey, J. E.: Purification and aqueous two-phase partitioning properties of recombinant *Vitreoscilla* hemoglobin, 788
Hayakawa, A.: *see* Kise, H., 584
Healy, A.-M.: *see* Connelly, I. C., 470
Hecht, H.-J.: *see* Hedrich, H. C., 840
Hedbys, L.: *see* Johansson, E., 781
Hedrich, H. C., Spener, F., Menge, U., Hecht, H.-J., and Schmid, R. D.: Large-scale purification, enzymic characterization, and crystallization of the lipase from *Geotrichum candidum*, 840
Hegde, M. V.: *see* Karyekar, S. K., 139
Heidlas, J., Engel, K.-H., and Tressl, R.: Enantioselectivities of enzymes involved in the reduction of methylketones by Bakers' yeast, 817
Heidstra, R.: *see* Buitelaar, R. M., 487
Heyndrickx, M., De Vos, P., and De Ley, J.: Fermentation of D-xylose by *Clostridium butyricum* LMG 1213t1 in chemostats, 893
Higgins, I. J.: *see* Brooks, S. L., 946
Hitzmann, B.: *see* Kracke-Helm, H. A., 554
Hu, W.-S.: *see* Frame, K. K., 690
Huddleston, J. G., Ottomar, K. W., Ngonyani, D. M., and Lyddiatt, A.: Influence of system and molecular parameters upon fractionation of intracellular proteins from *Saccharomyces* by aqueous two-phase partition, 24
Husain, Q.: *see* Saleemuddin, M., 290
Huyghebaert, A.: *see* van Gaver, D., 665
Hwang, Y. B.: *see* Lee, C. Y., 53

Jackson, A. M., Whipps, J. M., and Lynch, J. M.: Nutritional studies of four fungi with disease biocontrol potential, 456; Production, delivery systems, and survival in soil of four fungi with disease biocontrol potential, 636
Jansen, M. L.: *see* Grootjen, D. R. J., 828
Janssen, A. E. M., Klabbers, C., Franssen, M. C. R., and van't Riet, K.: Enzymatic synthesis of carbohydrate esters in 2-pyrrolidone, 565
Johansson, E., Hedbys, L., and Loarsson, P.-O.: Enzymatic synthesis of monosaccharide-amino acid conjugates, 781
Jones, W. J.: *see* Gil, G. H., 390

Kadouri, A.: *see* Kompier, R., 822
Kamath, N. and D'Souza, S. F.: Immobilization of ureolytic cells through flocculation and adhesion on cotton cloth using polyethylenimine, 935
Karan, B.: *see* Samal, B. B., 66
Kargi, F.: *see* Abu-Reesh, I., 913
Kargi, F. and Ganapathi, B.: Effects of precursors and stimulating agents on formation of indole alkaloids by *C. roseus* in a biofilm reactor, 643
Kargi, F. and Potts, P.: Effect of various stress factors on indole alkaloid formation by *C. roseus* (periwinkle) cells, 760
Karl, D. W., Magnusson, J. C., Carr, P. W., and Flickinger, M. C.: Preliminary assessment of removal of pyrogenic lipopolysaccharides with colloidal zirconia adsorbents, 708
Karyekar, S. K. and Hegde, M. V.: The hydrophobic domain of penicillin acylase is negatively charged, 139
Kasehagen, C., Linz, F., Kretzmer, G., Scheper, T. and Schugerl, K.: Metabolism of hybridoma cells and antibody secretion at high cell densities in dialysis tubing, 873
Kekos, D.: *see* Christakopoulos, P., 272
Kéry, V., Kogan, G., Zajacová, K., Slámová, K., Masler, L. and Alföldi, J.: Hydrolysis of yeast cell-wall glucan by extracellular (1→3)-β-glucanases from *Aspergillus niger*, 87
Kilburn, D. G.: *see* Ong, E., 59
Kilty, C.: *see* O'Fagain, C., 234
Kim, H.-S.: *see* Lee, Y.-D., 499; Ro, H.-S., 920
King, A. T., Davey, M. R., Mellor, I. R., Mulligan, B. J., and Lowe, K. C.: Surfactant effects on yeast cells, 148
Kingma, J.: *see* Preusting, H., 770
Kirk, T. K.: *see* Popp, J. L., 964
Kirwan, D. J.: *see* Harrington, T. J., 610
Kise, H. and Hayakawa, A.: Immobilization of proteases to porous chitosan beads and their catalysis for ester and peptide synthesis in organic solvents, 584
Kislev, N.: *see* Kompier, R., 822
Klabbers, C.: *see* Janssen, A. E. M., 565
Klaebe, A.: *see* Pradines, A., 19
Kloss, J.: *see* Patel, R. N., 906
Knowles, J.: *see* Harkki, A., 227
Kogan, G.: *see* Kery, V., 87
Köhler, K., Veide, A., and Enfors, S.-O.: Partitioning of β-galactosidase fusion proteins in PEG/potassium phosphate aqueous two-phase systems, 204
Kompier, R., Kislev, N., Segal, I., and Kadouri, A.: Use of a stationary bed reactor and serum-free medium for the production of recombinant proteins in insect cells, 822
Korte, H. E.: *see* Puls, J., 483
Kotzekidou, P.: *see* Roukas, T., 33
Koukios, E. G.: *see* Christakopoulos, P., 272
Koullas, D. P.: *see* Christakopoulos, P., 272
Kracke-Helm, H. A., Rinas, U., Hitzmann, B., and Schügerl, K.: Cultivation of recombinant *E. coli* and production of fusion protein in 60-l bubble column and airlift tower loop reactors, 554
Krantz, A.: *see* Gour-Salin, B. J., 408
Kretzmer, G.: *see* Kasehagen, C., 873
Kubatova, E.: *see* Olsson, L., 755
Kubicek, C. P.: *see* Kubicek-Pranz, E. M., 39
Kubicek-Pranz, E. M., Vollenhofer, S., Fritscher, C., Plicka, A., Hampel, W. A., and Kubicek, C. P.: Hexose-phosphorylating enzyme activities and carbon catabolite control of cellulase formation in *Trichoderma reesei* QM 9414 and some partially constitutive cellulase producer strains, 39
Kula, M. R.: *see* Steinke, D., 262
Kumar, S. and Viswanathan, L.: Production of biomass, carbon dioxide, volatile acids and their interrelationship with decrease in chemical oxygen demand, during distillery waste treatment by bacterial strains, 179
Kutsal, T.: *see* Özbas, T., 594

Ladisch, M. R.: Fermentation-derived butanol and scenarios for its use in energy-related applications, 280
Langenhoff, A. A. M.: *see* Buitelaar, R. M., 487
Larsson, P.-O.: *see* Johansson, E., 781
Law, B. A.: *see* Vulfson, E. N., 123
Leckie, F., Scragg, A. H., and Cliffe, K. C.: Effect of bioreactor design and agitator speed on the growth and alkaloid accumulation by cultures of *Catharanthus roseus*, 296
Leckie, F., Scragg, A. H. and Cliffe, K. R.: Effect of impeller design and speed on the large-scale cultivation of suspension cultures of *Catharanthus roseus*, 801
Lee, C. Y., Hwang, Y. B., and Chang, H. N.: Acrylonitrile adaptation of *Brevibacterium* sp. CH1 for increased acrylamide production, 53
Lee, Y.-D. and Kim, H.-S.: Enhancement of enzymatic production of cyclodextrins by organic solvents, 499
Lema, J. M.: *see* Miranda, M., 142
Lepoutre, J.-P.: *see* Pellerin, P., 617
Li, X. and Calza, R. E.: Purification and characterization of an extracellular β-glucosidase from the rumen fungus *Neocallimastix frontalis* EB188, 622
Linz, F.: *see* Kasehagen, C., 873
López-Munguía, A.: *see* Castillo, E., 127; Garcia, J. L., 672
Lortie, R., and André, G.: On the use of apparent kinetic parameters for immobilized enzyme with noncompetitive substrate inhibition, 960
Lowe, K. C.: *see* King, A. T., 148
Luong, J. H. T., Mulchandani, A., and Male, K. B.: Development of substrate recycle amplification system for L-glutamic acid assay, 116
Luyben, K. Ch. A. M.: *see* Grootjen, D. R. J., 530; Grootjen, D. R. J., 648; Grootjen, D. R. J., 734; Grootjen, D. R. J., 828
Lyddiatt, A.: *see* Huddleston, J. G., 24
Lynch, J. M.: *see* Carter, J. P., 537; Jackson, A. M., 456; Jackson, A. M., 636

Macaskie, L. E.: *see* Butler, A. J., 716
McCaskey, T. A.: *see* Frazer, F. R., 110
Macris, B. J.: *see* Christakopoulos, P., 272
Magnusson, J. C.: *see* Karl, D. W., 708
Male, K. B.: *see* Luong, J. H. T., 116
Mandenius, C. F.: *see* Olsson, L., 755
Mansfeld, J., Förster, M., Schellenberger, A., Dautzenberg, H.: Immobilization of invertase by encapsulation in polyelectrolyte complexes, 240
Mantyla, A.: *see* Harkki, A., 227
Marchal, R.: *see* Fayolle, F., 215
Martins, L. O. and Sá-Correia, I.: Alginate biosynthesis in mucoid recombinants of *Pseudomonas aeruginosa* overproducing GDP-mannose dehydrogenase, 385
Masler, L.: *see* Kery, V., 87
Masson, P., Gilbert, D., Guespin-Michel, J. F.: Immunological analysis of a blood-anticoagulant activity prepared from *Myxococcus xanthus* culture broth, 327
Mayer, F.: *see* Connelly, I. C., 470
Mehaia, M. A. and Cheryan, M.: Fermentation of date extracts to ethanol and vinegar in batch and continuous membrane reactors, 257
Meijlink, L. H. H. M.: See Grootjen, D. R. J., 530
Mellor, I. R.: *see* King, A. T., 148
Melo, J. S.: *see* D'Souza, S. F., 508
Menge, U.: *see* Hedrich, H. C., 840
Mickelson, C. A.: *see* Brahimi-Horn, M.-C., 740
Miller, D. A., Prausnitz, J. M., and Blanch, H. W.: Kinetics of lipase-catalysed interesterification of triglycerides in cyclohexane, 98
Miller, Jr., R. C.: *see* Ong, E., 59
Miranda, M., Murado, M. A., Sanroman, A., and Lema, J. M.: Mass transfer control of enzymatic hydrolysis of polysaccharides by glucoamylase, 142
Moen, M. A.: *see* Hammel, K. E., 15
Monot, F.: *see* Fayolle, F., 215
Monsan, P.: *see* Gonzalez, R. R., 349; Pradines, A., 19
Monshipouri, M. and Neufeld, R. J.: Activity and distribution of urease following microencapsulation within polyamine membranes, 309
Moresoli, C., Flaschel, E., and Renken, A.: Transesterification of phenylalanine by means of chymotrypsin in a continuous fixed bed reactor, 703
Moulson, P. S.: *see* Steytler, D. C., 221
Mueller, R. H.: *see* Patel, R. N., 906
Mulchandani, A.: *see* Luong, J. H. T., 116
Mulligan, B. J.: *see* King, A. T., 148; Starkey, M. P., 661
Murado, M. A.: *see* Miranda, M., 142
Murty, M. V. S. and Chandra, T. S.: Expression of xylanase and cellulase enzymes in a newly isolated *Clostridium* sp. SAIV, 430
Muttilainen, S.: *see* Harkki, A., 227

Neufeld, R. J.: *see* Monshipouri, M., 309; Ortmanis, A., 450
Neufeld, R. J., Peleg, Y., Rokem, J. S., Pines, O., and Goldberg, I.: L-malic acid formation by immobilized *Saccharomyces cerevisiae* amplified for fumarase, 991
Nevalainen, H.: *see* Harkki, A., 227
Newman, J. D.: *see* Brooks, S. L., 946
Ngonyani, D. M.: *see* Huddleston, J. G., 24
Nikolov, Z. L.: *see* Dalmia, B. K., 982

Oda, Y. and Ouchi, K.: Construction of a sucrose-fermenting bakers' yeast incapable of hydrolysing fructooligosaccharides, 495
O'Fágáin, C., O'Kennedy, R., and Kilty, C.: Stability of alanine aminotransferase is enhanced by chemical modification, 234
O'Kennedy, R.: *see* O'Fagain, C., 234
Okuma, H., Takahashi, H., Sekimukai, S., and Watanabe, E.: Biosensor system for continuous flow determination of enzyme activities. II. Simultaneous determination of plural enzyme activities, 134
Olsson, L., Mandenius, C. F., Kubatova, E., and Volc, J.: Immobilization of pyranose oxidase (*Phanerochaete chrysosporiuum*): characterization of the enzymic properties, 755
Ong, E., Gilkes, N. R., Miller, Jr., R. C., Warren, R. A. J., and Kilburn, D. G.: Enzyme immobilization using a cellulose-binding domain: Properties of a β-glucosidase fusion protein, 59
Onken, U.: *see* Qazi, G. N., 504
Ortmanis, A., Patterson, W. I., and Neufeld, R. J.: Evaluation of a new turbidimeter design incorporating a microprocessor-controlled variable pathlength cuvette, 450
Ottomar, K. W.: *see* Huddleston, J. G., 24
Ouchi, K.: *see* Oda, Y., 495
Owusu, R. K. and Cowan, D. A.: Isolation and partial characterization of a novel thermostable carboxylesterase from a thermophilic *Bacillus*, 158
Özbas, T. and Kutsal, T.: Effects of growth factors on riboflavin production by *Ashbya gossypii*, 594
Özilgen, M.: *see* Özilgen, S.: 419; Tukenmez, I., 925
Özilgen, M., Çelik, M., Bozoğlu, T. F.: Kinetics of spontaneous wine production, 252
Özilgen, S., and Özilgen, M.: A model for pasteurization with microwaves in a tubular flow reactor, 419

Panda, T.: *see* Babu, P. S. R., 676
Paneque, A.: *see* de la Vega, M. G., 267
Parker, C.: *see* Samal, B. B., 66
Parker, S. M.: *see* Gibson, T. D., 171
Parshad, R.: *see* Qazi, G. N., 504
Pasti, M. B.: *see* Paszczynski, A., 378
Paszczynski, A., Pasti, M. B., Goszczynski, S., Crawford, D. L. and Crawford, R. L.: New approach to improve degradation of recalcitrant azo dyes by *Streptomyces* spp. and *Phanerochaete chrysosporium*, 378
Patel, R. N., Robison, R. S., Szarka, L. J., Kloss, J., Thottathil, J. K., and Mueller, R. H.: Stereospecific microbial reduction of 4,5-dihydro-4-(4-methoxyphenyl)-6-(trifluoromethyl-1H-1)-benzazepin-2-one, 906
Patterson, W. I.: *see* Ortmanis, A., 450
Paul, F.: *see* Pradines, A., 19
Peleg, Y.: *see* Neufeld, R. J., 991
Pellerin, P., Gosselin, M., Lepoutre, J.-P., Samain, E., and Debeire, P.: Enzymic production of oligosaccharides from corncob xylan, 617
Penttila, M.: *see* Harkki, A., 227
Perdih, A., Cimerman, A., and Friedrich, J.: Fungal bioconversion of fruit distillery wastes, 848
Perie, J.: *see* Pradines, A., 19
Pines, O.: *see* Neufeld, R. J., 991
Pirozzi, D.: *see* Greco, Jr., G., 353
Plicka, A.: *see* Kubicek-Pranz, E. M., 39
Ponrathnam, S.: *see* Bahulekar, R., 858
Popp, J. L., Kirk, T. K., and Dordick, J. S.: Incorporation of *p*-cresol into lignins via peroxidase-catalysed copolymerization in nonaqueous media, 964
Potts, P.: *see* Kargi, F., 760
Poutanen, K.: *see* Puls, J., 483
Pradines, A., Klaebe, A., Perie, J., Paul, F. and Monsan, P.: Large-scale enzymatic synthesis of glycerol 1-phosphate, 19
Prausnitz, J. M.: *see* Miller, D. A., 98
Preusting, H., Kingma, J., and Witholt, B.: Physiology and polyester formation of *Pseudomonas oleovorans* in continuous two-liquid-phase cultures, 770
Prior, B. A.: *see* van Zyl, C., 82
Puls, J., Tenkanen, M., Korte, H. E., and Poutanen, K.: Products of hydrolysis of beechwood acetyl-4-O-methylglucuronoxylan by a xylanase and an acetyl xylan esterase, 483

Qazi, G. N., Parshad, R., Verma, V., Chopra, C. L., Buse, R., Träger, M., and Onken, U.: Diketo-gluconate fermentation by *Gluconobacter oxydans*, 504
Quintero, R.: *see* Castillo, E., 127

Ramjeesingh, M.: *see* Shami, E. Y., 424
Razak, C. N. A.: *see* Ampon, K., 597
Renken, A.: *see* Moresoli, C., 703
Reynolds, J.: *see* Steytler, D. C., 221
Rinas, U.: *see* Kracke-Helm, H. A., 554
Ro, H.-S., Kim, H.-S.: Continuous production of gluconic acid and sorbitol from sucrose using invertase and an oxidoreductase of *Zymomonas mobilis*, 920
Robinson, V.: *see* Gour-Salin, B. J., 408
Robison, R. S.: *see* Patel, R. M., 906
Rodríguez, M.: *see* Castillo, E., 127
Rodríguez-Mendiola, M. A., Stafford, A., Cresswell, R., and Arias-Castro, C.: Bioreactors for growth of plant roots, 697
Rokem, J. S.: *see* Neufeld, R. J., 991
Rombouts, F.M.: *see* Somers, W., 997
Rosell, C. M.: *see* Fernandez-Lafuente, R., 898

Ross, N. W. and Schneider, H.: Activities of *Candida rugosa* lipase and other esterolytic enzymes coated on glass beads and suspended in substrate and water vapor: Enzymes in thin liquid films, 370
Rothstein, A.: *see* Shami, E. Y., 424
Roukas, T. and Kotzekidou, P.: Production of lactic acid from deproteinized whey by coimmobilized *Lactobacillus casei* and *Lactococcus lactis* cells, 33
Roy-Arcand, L. and Archibald, F. S.: Direct dechlorination of chlorophenolic compounds by laccases from *Trametes (Coriolus) versicolor*, 194
Rozie, H.: *see* Somers, W., 997
Rusman, S.: *see* Šunjic, V., 344
Russell, A. J. and Beckman, E. J.: Should the high diffusivity of a supercritical fluid increase the rate of an enzyme-catalyzed reaction?, 1007

Sa-Correia, I.: *see* Martins, L. O., 385
Salam, F.: *see* Ampon, K., 597
Saleemuddin, M. and Husain, Q.: Concanavalin A: A useful ligand for glucoenzyme immobilization—a review, 290
Salleh, A. B.: *see* Ampon, K., 597
Samain, E.: *see* Pellerin, P., 617
Samal, B. B., Karan, B., Parker, C., and Stabinsky, Y.: Isolation and thermal stability studies of two novel serine proteinases from the fungus *Tritirachium album* Limber, 66
Sanroman, A.: *see* Miranda, M., 142
Sarney, D. B.: *see* Fregapane, G., 796; Vulfson, E. N., 123
Sawyer, C.: *see* Collins, M. E., 400
Schellenberger, A.: *see* Mansfeld, J., 240
Scheper, T.: *see* Freitag, R., 969; Kasehagen, C., 873
Schmid, R. D.: *see* Hedrich, H. C., 840
Schneider, H.: *see* Ross, N. W., 370
Schneider, K.-H. and Giffhorn, F.: Sorbitol dehydrogenase from *Pseudomonas* sp.: Purification characterization and application to quantitative determination of sorbitol, 332
Schügerl, K.: *see* Bahr, K. H., 747; Freitag, R., 969; Kasehagen, C., 873; Kracke-Helm, H. A., 554
Schwarz, A.: *see* Steinke, D., 262
Schweickart, R. W.: *see* Bryers, J. D., 412
Scragg, A. H.: *see* Leckie, F., 296; Leckie, F., 801
Segal, I.: *see* Kompier, R., 822
Sekimukai, S.: *see* Okuma, H., 134
Seris, J. L.: *see* Galliano, H., 478
Shami, E. Y., Ramjeesingh, M., Rothstein, A., and Zywulko, M.: Stabilization of enzymes by their specific antibodies, 424
Shaw, J.-F.: *see* Chien, C.-H., 45
Shaw, J.-F., Wang, D.-L., Wang, Y. J.: Lipase-catalysed ethanolysis and isopropanolysis of triglycerides with long-chain fatty acids, 544
Sheffield, P.: *see* Collins, M. E., 400
Silbiger, E. and Freeman, A.: Continuous Δ^1-hydrocortisone dehydrogenation with *in situ* product recovery, 869
Silman, R. W.: *see* Bryan, W. L., 2
Slámová, K.: *see* Kery, V., 87
Somers, W., Rozie, H., Bonte, A., Visser, J., Rombouts, F. M., and van't Riet, K.: On the interaction of α-amylase with crosslinked starch: Evaluation of process conditions, 997
Sparrow, L. G.: *see* Brahimi-Horn, M.-C., 740
Spener, F.: *see* Hedrich, H. C., 840
Spier, R. E.: Meeting report: The animal and plant cell working party of the European Federation of Biotechnology, 602
Srivastava, R. A. K.: Studies on stabilization of amylase by covalent coupling to soluble polysaccharides, 164
Stabinsky, Y.: *see* Samal, B. B., 66
Stafford, A.: *see* Rodríguez-Mendiola, M. A., 697
Starkey, M. P., Fenning, T., Davey, M. R., and Mulligan, B. J.: Design and use of synthetic oligonucleotide probes in the cloning of δ-endotoxin genes from *Bacillus thuringiensis*, 661
Steinke, D., Schwarz, A., Wandrey, C., and Kula, M. R.: Formation of peptide bonds by carboxypeptidase *c* from orange leaves, 262
Stephens, S. K., Elliott, T. J., and Wood, D. A.: Extracellular enzyme mutants of *Coprinus bilanatus*, 976
Steytler, D. C., Moulson, P. S., and Reynolds, J.: Biotransformations in near-critical carbon dioxide, 221
Storer, A. C.: *see* Gour-Salin, B. J., 408
Šunjic, V., Gelo, M., Rusman, S., DiGrazia, L. and Clauti, G.: Stereoselective reduction of two zeranole precursors by Bakers' yeast, 344
Suominen, P.: *see* Harkki, A., 227
Szarka, L. J.: *see* Patel, R. N., 906

Takahashi, H.: *see* Okuma, H., 134
Taylor, F. and Craig, Jr., J. C.: Scale-up of flat-plate reactors for enzymatic hydrolysis of fats and oils, 956
Tenkanen, M.: *see* Puls, J., 483
Thomas, O. R. T. and White, G. F.: Immobilization of the surfactant-degrading bacterium *Pseudomonas* C12B in polyacrylamide gel. III. Biodegradation specificity for raw surfactants and industrial wastes, 338
Thompson, R. N.: Quantification of the end-products of the acetone-butanol-ethanol fermentation by gas chromatography, 722
Thottathil, J. K.: *see* Patel, R. N., 906
Tornabene, T. G.: *see* Gil, G. H., 390
Träger, M.: *see* Qazi, G. N., 504
Tramper, J.: *see* Buitelaar, R. M., 487
Tressl, R.: *see* Heidlas, J., 817
Tukenmez, I., Ozilgen, M., and Bicer, A.: Kinetic aspects of the fermentation of cotton fibers at different pH values in a fermenter inoculated with rumen microorganisms, 925
Turner, A. P. F.: *see* Brooks, S. L., 946

Ushio, K., Ebara, K., and Yamashita, T.: Selective inhibition of *R*-enzymes by simple organic acids in yeast-catalysed reduction of ethyl 3-oxobutanoate, 834

van der Lans, R. G. J. M.: *see* Grootjen, D. R. J., 530; Grootjen, D. R. J., 648; Grootjen, D. R. J., 734; Grootjen, D. R. J., 828
van Gaver, D. and Huyghebaert, A.: Optimization of yeast cell disruption with a newly designed bead mill, 665
van't Riet, K.: *see* Janssen, A. E. M., 565; Somers, W., 997
van Zyl, C., Prior, B. A., du Preez, J. C.: Acetic acid inhibition of D-xylose fermentation by *Pichia stipitis*, 82
Veide, A.: *see* Köhler, K., 204
Ventom, A. M. and Asenjo, J. A.: Characterization of yeast lytic enzymes from *Oerskovia xanthineolytica* LL-G109, 71
Verma, V.: *see* Qazi, G. N., 504
Vicente, C.: *see* García-Junceda, E., 275
Visser, J.: *see* Somers, W., 997
Viswanathan, L.: *see* Kumar, S., 179
Vleesenbeek, R.: *see* Grootjen, D. R. J., 530; Grootjen, D. R. J., 734
Volc, J.: *see* Olsson, L., 755
Vollenhofer, S.: *see* Kubicek-Pranz, E. M., 39
von Stocker, U.: *see* Aeschlimann, A., 811
Vulfson, E. N.: *see* Fregapane, G., 796
Vulfson, E. N., Sarney, D. B., and Law, B. A.: Enhancement of subtilisin-catalysed interesterification in organic solvents by ultrasound irradiation, 123

Wandrey, C.: *see* Steinke, D., 262
Wang, D.-L.: *see* Shaw, J.-F., 544
Wang, Y. J.: *see* Shaw, J.-F., 544
Wan Yunus, W. M. Z.: *see* Ampon, K., 597
Warren, R. A. J.: *see* Ong, E., 59
Watanabe, E.: *see* Okuma, H., 134
Wei, Y.-H.: *see* Chien, C.-H., 45
Weijers, C. A. G. M., and de Bont, J. A. M.: Enantioselective degradation of 1,2,-epoxyalkanes by *Nocardia* H8, 306
Weisser, H.: *see* Bahr, K. H., 747
Whipps, J. M.: *see* Jackson, A. M., 456; Jackson, A. M., 636
White, G. F.: *see* Thomas, O. R. T., 338
Windmeijer, M. G. A.: *see* Grootjen, D. R. J., 734
Witholt, B.: *see* Preusting, H., 770
Wood, D. A.: *see* Stephens, S. K., 976
Woodward, J. R.: *see* Gibson, T. D., 171

Xavier, A. M. R. B.: *see* Gonçalves, L. M. D., 314

Yamashita, T.: *see* Ushio, K., 834
Yeh, T.: *see* Bryers, J. D., 412

Zajacová, K.: *see* Kery, V., 87
Zywulko, M.: *see* Shami, E. Y., 424

Subject index

ABE
Clostridium acetobutylicum, Solvent analysis, GC, VFA, Fermentation, 722
Acetate
Acid-hydrolysed wood, *Klebsiella pneumoniae*, Inhibitors, Sulfate, Furfural, Phenolics, 2,3-butanediol, 110
Acetic acid
Dates, *Saccharomyces cerevisiae*, *Acetobacter aceti*, Ethanol, Vinegar, Membrane bioreactor, 257
Acetic acid inhibition
D-xylose fermentation, Hemicellulose hydrolysate, *Pichia stipitis*, 82
Acetobacter aceti
Dates, *Saccharyomyces cerevisiae*, Ethanol, Vinegar, Acetic acid, Membrane bioreactor, 257
Acetone-butanol fermentation
Butyric fermentation, Electrodialysis, Butyrate extraction, Enzymatic esterification, 215
Acetyl-4-O-methylglucuronoslyan
Xylooligomers, Xylanase, Acetyl xylan esterase, Pulsed amperometric detection, 483
Acetyl xylan esterase
Acetyl-4-O-methylglucuronosylan, Xylooligomers, Xylanase, Pulsed amperometric detection, 483
α-N-acetylgalactosaminidase
Glycosidases, Reversed hydrolysis, α-mannosidase, α-D-Man(1-4)-L-Ser, α-D-GalNAc-(1.4)-Ser, 781
Acid-hydrolysed wood
Klebsiella pneumoniae, Inhibitors, Acetate, Sulfate, Furfural, Phenolics, 2,3-butanediol, 110
Acrylamide
Nitrile hydratase, Acrylonitrile, Adaptation, Tolerance, Inhibition, *Brevibacterium* sp. CH2, 53
Acrylic
Lipase, Immobilized enzyme, Activity, Glass fiber, Empirical model, Tallow, *Thermomyces lanuginosus*, Fermentation, Separator, Screens, 956
Acrylonitrile
Nitrile hydratase, Acrylamide, Adaptation, Tolerance, Inhibition, *Brevibacterium* sp. CH2, 53
Active dry yeast
Saccharomyces cerevisiae, Fermentation kinetics, Specific growth rate, Specific production rate, Viability, Solid-state fermentation, 2
Activity
Lipase, Immobilized enzyme, Glass fiber, Emperical model, Acrylic, Tallow, *Thermomyces lanuginosus*, Fermentation, Separator, Screens, 956
Microencapsulation, Urease, 309
Adaptation
Nitrile hydratase, Acrylonitrile, Acrylamide, Tolerance, Inhibition, *Brevibacterium* sp. CH2, 53
Adhered cotton cloth
Ureolytic cells, Urease, Flocculate, Cellulosic surface, Immobilization, Urea effluent, Frame reactor, 935
Adhesion
Coimmobilizate, Polyethylenimine, Yeast cells, Glucose oxidase, Cotton thread, 508
Adsorption
Aspergillus niger, Glucoamylase, Starch-binding domain, Elution, pH, Ionic strength, 982
β-Glucosidase, Cellulose, Fusion protein, Enzyme immobilization, Stability, 59
Aerated fermentation
Ethanol bioreactor, Ethanol production, Continuous ethanol production, Continuous fermentation, Yeast, Immobilized cell reactor, 390
Affinity chromatography
Downstream processing, α-amylase, Crosslinked starch, 997
Affinity partitioning
β-Galactosidase fusions, PEG4000/potassium phosphate, Aqueous two-phase partitioning, Precipitation, 204
Agarose
Fumarase, L-malic acid, *Saccharomyces cerevisiae*, Immobilization, 991
Agitated bioreactor
Hydrodynamic, Hybridoma, Monoclonal antibodies, 913
Agrobacterium rhizogenes
Bioreactor, Root cultures, *Trigonella foenum-graecum*, Diosgenin, 697
Airlift reactor
2-Ketogluconate, 2,5-diketogluconate, Gluconate dehydrogenase, *Gluconobacter oxydans*, 504
Airlift tower loop reactor
Recombinant *E. coli*, Fusion protein, Bubble column, 554
Alanine aminotransferase
Enzyme stabilization, Protein modification, Bis-imidates, Succinic anhydride, 234
Alcohol dehydrogenase
Baker's yeast, Permeabilization, Cetyltrimethylammonium bromide, Glucose-6-phosphate dehydrogenase, Hexokinase, 154
Gluconobacter oxydans, Asymmetric reduction, 9
Alcoholysis
Lipase, Stability, Ethanol, Isopropanol, 544
Alginate biosynthesis
Pseudomonas aeruginosa, Enzyme overproduction, GDP-mannose dehydrogenase, Genetically manipulated microorganisms, 385
Alkaloid
Catharanthus roseus, Bioreactor, Baffles, Shear stress, 296
Amidase
Trypsin, Esterase, Structure, k_{cat}, K_m, 320
Amplification
Glutamic acid, Glutamate oxidase, Glutamic oxaloacetic transaminase, Hydrogen peroxide production, Substrate recycling, 116
α-amylase
Downstream processing, Crosslinked starch, Affinity chromatography, 997
Amylase
Bacillus stearothermophilus, Glycosylation, Thermal stability, 164
Amylases
Stabilization, Enzymes, Antibodies, Subtilisin, 424
Amylopectin
Mass transfer, Enzymatic hydrolysis, Glucoamylase, Starch, Glycogen, 142
Anaerobes
Cellulase, Xylan, Xylanase, Xylose, 430
Antibiotic
Cyanobacterium, *Nostoc muscorum*, Optimization, 76
Antibiotic synthesis by penicillin G acylase
Enzymes in organic synthesis, Enzymes in organic solvents, Design of thermodynamically controlled synthesis, 898
Antibodies
Stabilization, Enzymes, Amylases, Subtilisin, 424
Trichoderma harzianum, Protein, Antigens, Serology, Biomass, Straw, Polyclonal, 537
Anticoagulant
Myxococcus xanthus, Lipopolysaccharide, 327
Antigens
Trichoderma harzianum, Protein, Serology, Biomass, Straw, Polyclonal, Antibodies, 537
Antithrombin III assay
On-line immunoassay, Turbidimetric assay, Bioprocess monitoring, Pullulanase assay, 969
Aqueous two-phase partitioning
β-Galactosidase fusions, PEG4000/potassium phosphate, Affinity partitioning, Precipitation, 204
Aqueous two-phase systems
Partition, Protein recovery, Modeling, 24
Thaumatin, PEG molecular weight, Effect of NaCl, Purification, *E. coli* homogenate proteins, BSA, Reversed phase HPLC analysis, 629
Arabino-xylo-oligosaccharides
Clostridium thermolacticum, Endoxylanase, Corncob xylan, Xylo-oligosaccharides, 617
Arthrobacter
Liposome, Microbial catalysis, Hydrocortisone, 245

Ashbya gossypii
Riboflavin, Growth factors, 594
Aspergillus fonsecaeus
β-Galactosidase, Thermostability, 349
Aspergillus niger
(1-3)-β-Glucanases, Yeast cell-wall glucan, 87
Glucoamylase, Starch-binding domain, Adsorption, Elution, pH, Ionic strength, 982
Aspergillus terreus
D-Galactonate dehydratase, 2-keto-3-deoxy-D-galactonate aldolase, 930
Asymmetric reduction
Gluconobacter oxydans, Alcohol dehydrogenase, 9
Autographa californica
Bioreactor, Insect cells, Baculovirus, β-galactosidase, Serum-free medium, *Spodoptera frugiperda*, 822
Azo dyes
Phanerochaete chrysosporium, *Streptomyces*, Ligninase, Manganese peroxidase, Biodegradation, Decolorization, 378
Azotobacter chroococcum
Invertase, Exoenzyme, Glycoprotein, 267

Bacillus sp.
Cyclodextrin glycosyltransferase (CGTase), Cyclodextrins, Dextrinizing activity, Organic solvents, 499
Bacillus stearothermophilus
Amylase, Glycosylation, Thermal stability, 164
Bacillus thuringiensis
Crystal toxin, Oligonucleotide probes, Hybridization methodology, Gene cloning, 661
Bacteria
Diacetyl, Diacetyl reductase, Diketone, Enzyme assay, Liver, 171
Baculovirus
Bioreactor, Insect cells, β-galactosidase, Serum-free medium, *Spodoptera frugiperda*, *Autographa californica*, 822
Baffles
Catharanthus roseus, Bioreactor, Alkaloid, Shear stress, 296
Baker's yeast
Permeabilization, Cetyltrimethylammonium bromide, Alcohol dehydrogenase, Glucose-6-phosphate dehydrogenase, Hexokinase, 154
Reduction, Diastereoselectivity, α-zeranole, α-zeralenole, 344
Baking yeast
Saccharomyces cerevisiae, Fructooligosaccharide, MAL-constitutive, 495
Barley β-glucan
Penicillum capsulatum, Solid-state culture, Endo-β-glucanase, Lichenan, Laminarin, CM-cellulose, 462
Batch culture
Hybridoma, Growth kinetics, Producing cells, Nonproducing cells, 690
Bioanalysis
Pyranose oxidase, Immobilization, *Phanerochaete chrysosporium*, 755
Biocatalysis
Hydrolases, Biphasic water-organic system, Stability, Reaction yield, 547
Biocontrol
Nutrition, Minerals, C : N ratios, Trichoderma, *Gliocladium*, 456
Sclerotium cepivorum, Shelf life, Formulation, Survival, *Trichoderma*, *Gliocladium virens*, 636
Bioconversion
Fruit slops, Fungi, 848
Biodegradation
Azo dyes, *Phanerochaete chrysosporium*, *Streptomyces*, Ligninase, Manganese peroxidase, Decolorization, 378
Detergents, Surfactants, Immobilized bacteria, Industrial wastes, 338
Biomass
Spentwash, Distillery waste, Carbon dioxide, Volatile acids, 179
Trichoderma harzianum, Protein, Antigens, Serology, Straw, Polyclonal, Antibodies, 537
Variable pathlength turbidimeter, Fermentation, 450
Bioprocess monitoring
On-line immunoassay, Turbidimetric assay, Antithrombin III assay, Pullulanase assay, 969
Bioreactor
Agrobacterium rhizogenes, Root cultures, *Trigonella foenum-graecum*, Diosgenin, 697
Catharanthus roseus, Alkaloid, Baffles, Shear stress, 296
Insect cells, Baculovirus, β-galactosidase, Serum-free medium, *Spodoptera frugiperda*, *Autographa californica*, 822
Biosensor
Process control, Fermentation monitoring, 946
Biotransformation
Yeast, Enzymes, Enantioselectivity, Methylketones, *Saccharomyces cerevisiae*, 817
Biphasic water-organic system
Biocatalysis, Hydrolase, Stability, Reaction yield, 547
Bis-imidates
Enzyme stabilization, Protein modification, Alanine aminotransferase, Succinic anhydride, 234
Brevibacterium sp. CH2
Nitrile hydratase, Acrylonitrile, Acrylamide, Adaptation, Tolerance, Inhibition, 53
BSA
Aqueous two-phase systems, Thaumatin, PEG molecular weight, Effect of NaCl, Purification, *E. coli* homogenate proteins, Reversed phase HPLC analysis, 629
Bubble column
Recombinant *E. coli*, Fusion protein, Airlift tower loop reactor, 554
2,3-butanediol
Acid-hydrolysed wood, *Klebsiella pneumonia*, Inhibitors, Acetate, Sulfate, Fufural, Phenolics, 110
Butyrate extraction
Acetone-butanol fermentation, Butyric fermentation, Electrodialysis, Enzymatic esterification, 215
Butyric fermentation
Acetone-butanol fermentation, Electrodialysis, Butyrate extraction, Enzymatic esterification, 215

Calcium antagonists
Microbial reduction, Stereospecificity, 906
Candida rugosa
Enzyme, Lipase, Esterase, Hydrolysis, Water activity, Thin film, Vapor, Gas, 370
Carbohydrate ester
Lipase, Organic solvent catalysis, Esterification, Membrane reactor, 565
Carbon dioxide
Biomass, Spentwash, Distillery waste, Volatile acids, 179
C. roseus cells, Immobilization, Growth, Viability, Respiration, Conductivity, 882
Supercritical, Lipase, Ester, 221
Carboxypeptidase c
Orange leaves, Peptide synthesis, 262
Catabolite repression
Cellulase, Cellobiohydrolase I, *Trichoderma reesei*, Hexokinase, Glucokinase, 39
Catharanthus roseus
Bioreactor, Alkaloid, Baffles, Shear stress, 296
Stirred-tank bioreactors, High impeller speeds, Impeller design, 801
Cell flotation
Foam, *Hansenula polymorpha*, Exoglycoprotein, Gel electrophoresis, 747
Cell immobilization
Polyethyleneimine, Enzyme immobilization, 858
Cell wall
Yeast, Mechanical cell disruption, Protein excretion, Invertase, Glucose-6-phosphate-dehydrogenase, 665
Cell-recycle reactor
Lactic acid, *Lactobacillus helveticus*, Whey permeate, 811
Cellobiohydrolase I
Cellulase, *Trichoderma reesei*, Catabolite repression, Hexokinase, Glucokinase, 39
Cellulase
Anaerobes, Xylan, Xylanase, Xylose, 430
Cellobiohydrolase I, *Trichoderma reesei*, Catabolite repression, Hexokinase, Glucokinase, 39
Cellulases
Filter paper/cellobiase ratio, Enzymatic profile, 104
Trichoderma reesei, Strain improvement, Hypercellulolytic mutant, Overexpression, Gene inactivation, 227
Cellulose
β-Glucosidase, Fusion protein, Adsorption, Enzyme immobilization, Stability, 59
Fusarium oxysporum, Ethanol fermentation, Straw, Crystallinity index, 272

Cellulose sulfate/
poly(dimethyldiallyammonium choloride)
Immobilization, Invertase, Encapsulation, Polyelectrolyte complexes, Kinetics, Stability, 240
Cellulosic surface
Ureolytic cells, Urease, Flocculate, Adhered cotton cloth, Immobilization, Urea effluent, Frame reactor, 935
Cetyltrimethylammonium bromide
Baker's yeast, Permeabilization, Alcohol dehydrogenase, Glucose-6-phosphate dehydrogenase, Hexokinase, 154
Characterization
Pseudomonas sp., Sorbitol dehydrogenase, Sorbitol transformation, 332
Chemostat
Clostridium butyricum, D-xylose, Hydrogen production, 893
Chlorophenolic compounds
Dechlorination, Laccases, *Trametes* (*Coriolus*) *versicolor*, 194
Cholesterol esterase
Esterase, Lipase, *Pseudomonas*, *Acinetobacter*, Wool grease, Wool-scour effluent, 740
Citrobacter sp.
Phosphatase, Immobilized cells, Diffusional constraints, 716
Clostridium acetobutylicum
Solvent analysis, GC, ABE, VFA, Fermentation, 722
Clostridium butyricum
D-xylose, Chemostat, Hydrogen production, 893
Clostridium thermolacticum
Endoxylanase, Corncob xylan, Xylo-oligosaccharides, Arabino-xylo-oligosaccharides, 617
CM-cellulose
Penicillum capsulatum, Solid-state culture, Endo-β-glucanase, Barley β-glucan, Lichenan, Laminarin, 462
C : N ratios
Nutrition, Biocontrol, Minerals, *Trichoderma*, *Gliocladium*, 456
Coimmobilizate
Polyethylenimine, Yeast cells, Glucose oxidase, Cotton thread, Adhesion, 508
Coimmobilized mixed culture
Lactic Acid, Deproteinized whey, *Lactobacillus casei*, *Lactococcus lactis*, 33
Colloidal zirconia
Pyrogenic lipopolysaccharides, *E. coli* pyrogen removal, 708
Competitive inhibitors of
Penicillin G acylases, Stabilizing effect of competitive inhibitors, Immobilization of penicillin G acylases, Enzyme-support multipoint covalent attachment, 210
Concanavalin A
Glycoenzymes, Immobilization, 290
Conductivity
C. roseus cells, Immobilization, Growth, Carbon dioxide, Viability, Respiration, 882
Continuous ethanol production
Ethanol bioreactor, Ethanol production, Continuous fermentation, Aerated fermentation, Yeast, Immobilized cell reactor, 390
Continuous fermentation
Ethanol bioreactor, Ethanol production, Continuous ethanol production, Aerated fermentation, Yeast, Immobilized cell reactor, 390
Continuous fixed bed reactor
Enzyme catalysis, Immobilized α-chymotrypsin, Transesterification, 703
Copolymerization
Horseradish peroxidase, Lignin, Nonaqueous media, Phenolic grafting, 964
Coprinus bilanatus
Extracellular enzyme mutants, Secondary homothallism, 976
Corncob xylan
Clostridium thermolacticum, Endoxylanase, Xylo-oligosaccharides, Arabino-xylo-oligosaccharides, 617
Cosolvents
Steroid, Dehydrogenation, Hydrocortisone, Immobilized cells, 869
Cotton thread
Coimmobilizate, Polyethylenimine, Yeast cells, Glucose oxidase, Adhesion, 508
C. roseus cells
Immobilization, Growth, Carbon dioxide, Viability, Respiration, Conductivity, 882
Crosslinked starch
Downstream processing, α-amylase, Affinity chromatography, 997
Crystallinity index
Fusarium oxysporum, Ethanol fermentation, Cellulose, Straw, 272
Crystallization
Triacylglycerol hydrolase, Lipase, *Geotrichum candidum*, Microheterogeneity, Glycosylation, Substrate specificity, X-ray analysis, 840
Crystal toxin
Bacillus thuringiensis, Oligonucleotide probes, Hybridization methodology, Gene cloning, 661
Cyanobacterium
Nostoc muscorum, Antibiotic, Optimization, 76
Cyanuric chloride
E. coli, Glutaraldehyde, Penicillin amidase, 676
Cyclodextrin glycosyltransferase (CGTase)
Cyclodextrins, Dextrinizing activity, Organic solvents, *Bacillus* sp., 499
Cyclodextrins
Cyclodextrin glycosyltransferase (CGTase), Dextrinizing activity, Organic solvents, *Bacillus* sp., 499

Dates
Saccharomyces cerevisiae, *Acetobacter* aceti, Ethanol, Vinegar, Acetic acid, Membrane bioreactor, 257
Dechlorination
Chlorophenolic compounds, Laccases, *Trametes* (*Coriolus*) *versicolor*, 194
Decolorization
Azo dyes, *Phanerochaete chrysosporium*, *Streptomyces*, Ligninase, Manganese peroxidase, Biodegradation, 378
Dehydrogenation
Steroid, Hydrocortisone, Immobilized cells, Cosolvents, 869
Deproteinized whey
Lactic Acid, *Lactobacillus casei*, *Lactococcus lactis*, Coimmobilized mixed culture, 33
Design of kinetically controlled synthesis
Enzymes in organic synthesis, Peptide synthesis by stabilized trypsin, Design of thermodynamically controlled synthesis, Enzymes in organic solvents, 573
Design of thermodynamically controlled synthesis
Enzymes in organic synthesis, Design of kinetically controlled synthesis, Peptide synthesis by stabilized trypsin, Enzymes in organic solvents, 573
Enzymes in organic synthesis, Enzymes in organic solvents, Antibiotic synthesis by penicillin G acylase, 898
Detergents
Surfactants, Immobilized bacteria, Biodegradation, Industrial wastes, 338
Dextrinizing activity
Cyclodextrin glycosyltransferase (CGTase), Cyclodextrins, Organic solvents, *Bacillus* sp., 499
D-Galactonate dehydratase
2-keto-3-deoxy-D-galactonate aldolase, *Aspergillus terreus*, 930
Diacetyl
Diacetyl reductase, Diketone, Enzyme assay, Liver, Bacteria, 171
Diacetyl reductase
Diacetyl, Diketone, Enzyme assay, Liver, Bacteria, 171
Diastereoselectivity
Bakers' yeast, Reduction, α-zeranole, α-zeralenole, 344
Diauxic metabolism
Methylotrophic yeast, *Hansenula polymorpha*, Dilution rates, 412
Diauxie
Pichia stipitis, Flocculation, Ethanol fermentation, Xylose, 734
Pichia stipitis, *Saccharomyces cerevisiae*, Ethanol fermentation, Xylose, Reactors in series, 828
Pichia stipitis, *Saccharomyces cerevisiae*, Immobilization, Ethanol fermentation, Xylose, Model, 530
Pichia stipitis, Xylose, Ethanol fermentation, Oxygen limitation, Model, 648
Diffusion
Immobilized enzyme, Substrate inhibition, Multiple steady states, 960
Diffusional constraints
Citrobacter sp., Phosphatase, Immobilized cells, 716
2,5-diketogluconate
2-ketogluconate, Gluconate dehydrogenase, Airlift reactor, *Gluconobacter oxydans*, 504
Diketone
Diacetyl, Diacetyl reductase, Enzyme assay, Liver, Bacteria, 171
Dilution rates
Methylotrophic yeast, *Hansenula polymorpha*, Diauxic metabolism, 412

Diosgenin
Agrobacterium rhizogenes, Bioreactor, Root cultures, *Trigonella foenum-graecum*, 697
Distillery waste
Biomass, Spentwash, Carbon dioxide, Volatile acids, 179
Domains
Penicillium capsulatum, Multienzyme complex, β-glucosidase, Laminarinase, β-glucanase, Lichenase, 470
Downstream processing
α-amylase, Crosslinked starch, Affinity chromatography, 997
D-xylose fermentation
Acetic acid inhibition, hemicellulose hydrolysate, *Pichia stipitis*, 82

E. coli
Cyanuric chloride, Glutaraldehyde, *Penicillin amidase*, 676
E. coli homogenate proteins
Aqueous two-phase systems, Thaumatin, PEG molecular weight, Effect of NaCl, Purification, BSA, Reversed phase HPLC analysis, 629
E. coli pyrogen removal
Pyrogenic lipopolysaccharides, Colloidal zirconia, 708
Effect of NaCl
Aqueous two-phase systems, Thaumatin, PEG molecular weight, Purification, *E. coli* homogenate proteins, BSA, Reversed phase HPLC analysis, 629
Electrodialysis
Acetone-butanol fermentation, Butyric fermentation, Butyrate extraction, Enzymatic esterification, 215
Electrorotation measurements
Hybridoma cells, Monoclonal antibody, Membrane reactor, High cell density, Flow cytometry, 873
Elution
Aspergillus niger, Glucoamylase, Starch-binding domain, Adsorption, pH, Ionic strength, 982
Empirical model
Lipase, Immobilized enzyme, Activity, Glass fiber, Acrylic, Tallow, *Thermomyces lanuginosus*, Fermentation, Separator, Screens, 956
Enantioselective degradation
Optically pure 1,2-epoxyalkanes, Epoxide degradation, *Nocardia* sp., 306
Enantioselectivity
Lipase, Hydroxyacid esters, Esterification, Transesterification, 655
Yeast, Biotransformation, Enzymes, Methylketones, *Saccharomyces cerevisiae*, 817
Encapsulation
Immobilization, Invertase, Polyelectrolyte complexes, Cellulose sulfate/poly (dimethyldiallylammonium choloride), Kinetics, Stability, 240
Endo-β-glucanase
Penicillum capsulatum, Solid-state culture, Barley β-glucan, Lichenan, Laminarin, CM-cellulose, 462
Endoplasmic reticulum
Phanerochaete chrysosporium, Lignin peroxidase, Mn(II)-dependent peroxidase, Immobilization, Mitochondria, 727
Endoxylanase
Clostridium thermolacticum, Corncob xylan, Xylo-oligosaccharides, Arabino-xylo-oligosaccharides, 617
Enzymatic esterification
Acetone-butanol fermentation, Butyric fermentation, Electrodialysis, Butyrate extraction, 215
Enzymatic hydrolysis
Mass transfer, Glucoamylase, Starch, Amylopectin, Glycogen, 142
Enzymatic profile
Cellulases, Filter paper/cellobiase ratio, 104
Enzymatic synthesis
Immobilized alkaline phosphatase, Glycerol 1-phosphate, Phosphorylation, Reversion, 19
Enzyme
Lipase, *Candida rugosa*, Esterase, Hydrolysis, Water activity, Thin film, Vapor, Gas, 370
Enzyme activity sensor
Pyruvate oxidase, Lactic dehydrogenase, Glutamic-pyruvic transaminase, 134
Enzyme assay
Diacetyl, Diacetyl reductase, Diketone, Liver, Bacteria, 171
Enzyme catalysis
Immobilized α-chymotrypsin, Transesterification, Continuous fixed bed reactor, 703
Enzyme chemical inactivation
Enzyme thermal inactivation, Enzyme stabilization, Immobilized enzymes, Thermal equivalence, 353
Enzyme electrode
Modeling, Lactose, 672
Enzyme immobilization
β-Glucosidase, Cellulose, Fusion protein, Adsorption, stability, 59
Polyethyleneimine, Cell immobilization, 858
Enzyme inhibitor
Papain, N-(N-acetyl-L-phenylalanyl)glycinenitrile, N-(N-acetyl-L-phenylalanyl)glycinamide, 13C-NMR, 15N-NMR, 408
Yeast reduction, Stereochemical control, Ethyl 3-oxobutanoate, ethyl (S)-hydroxy-butanoate, 834
Enzyme kinetics
Lipase, Interesterification, Triglycerides, 98
Enzyme overproduction
Alginate biosynthesis, *Pseudomonas aeruginosa*, GDP-mannose dehydrogenase, Genetically manipulated microorganisms, 385
Enzymes
Stabilization, Antibodies, Amylases, Subtilisin, 424
Yeast, Biotransformation, Enantioselectivity, Methylketones, Saccharomyces cerevisiae, 817
Enzymes in organic solvents
Enzymes in organic synthesis, Design of kinetically controlled synthesis, Peptide synthesis by stabilized trypsin, Design of thermodynamically controlled synthesis, 573
Enzymes in organic synthesis, Design of thermodynamically controlled synthesis, Antibiotic synthesis by penicillin G acylase, 898
Enzymes in organic synthesis
Design of kinetically controlled synthesis, Peptide synthesis by stabilized trypsin, Design of thermodynamically controlled synthesis, Enzymes in organic solvents, 573
Enzymes in organic solvents, Design of thermodynamically controlled synthesis, Antibiotic synthesis by penicillin G acylase, 898
Enzyme stabilization
Enzyme thermal inactivation, Enzyme chemical inactivation, Immobilized enzymes, Thermal equivalence, 353
Protein modification, Alanine aminotransferase, Bix-imidates, Succinic anhydride, 234
Enzyme-support multipoint covalent attachment
Penicillin G acylases, Competitive inhibitors of, Immobilization of penicillin G acylases, 210
Enzyme thermal inactivation
Enzyme chemical inactivation, Enzyme stabilization, Immobilized enzymes, Thermal equivalence, 353
Epoxide degradation
Optically pure 1,2-epoxyalkanes, enantioselective degradation, *Nocardia* sp., 306
Escherichia coli
Vitreoscilla hemoglobin, Partitioning, Extraction, Purification, 788
Ester
Supercritical, Carbon dioxide, Lipase, 221
Esterase
Enzyme, Lipase, *Candida rugosa*, Hydrolysis, Water activity, Thin film, Vapor, Gas, 370
Lipase, Cholesterol esterase, *Pseudomonas*, *Acinetobacter*, Wool grease, Wool-scour effluent, 740
Trypsin, Amidase, Structure, k_{cat}, K_m, 320
Esterification
Alginate immobilized lipase, Organic solvent, Alginate gel stability, Two-phase system, Transesterification, 4A
Lipase, Carbohydrate ester, Organic solvent catalysis, Membrane reactor, 565
Lipase, Enantioselectivity, Hydroxyacid esters, Transesterification, 655
Reductive alkylation, Lipase, Esterolytic, 597
Esterolytic
Reductive alkylation, Lipase, Estrification, 597
Ester synthesis
Protease immobilization, Porous chitosan beads, Peptide synthesis, Organic solvent, 584

Ethanol
Dates, *Saccharomyces cerevisiae*, *Acetobacter aceti*, Vinegar, Acetic acid, Membrane bioreactor, 257
Jerusalem artichoke, Fermentation, Single cell protein, High-fructose syrup, 359
Lipase, Alcoholysis, Stability, Isopropanol, 544
Ethanol bioreactor
Ethanol production, Continuous ethanol production, Continuous fermentation, Aerated fermentation, Yeast, Immobilized cell reactor, 390
Ethanol fermentation
Fusarium oxysporum, Cellulose, Straw, Crystallinity index, 272
Pichia stipitis, Diauxie, Flocculation, Xylose, 734
Pichia stipitis, Diauxie, Xylose, Oxygen limitation, Model, 648
Pichia stipitis, *Saccharomyces cerevisiae*, Diauxie, Immobilization, Xylose, Model, 530
Pichia stipitis, *Saccharomyces cerevisiae*, Xylose, Diauxie, Reactors in series, 828
Ethanol production
Ethanol bioreactor, Continuous ethanol production, Continuous fermentation, Aerated fermentation, Yeast, Immobilized cell reactor, 390
Ethyl 3-oxobutanoate
Yeast reduction, Enzyme inhibitor, Stereochemical control, ethyl (S)-hydroxy-butanoate, 834
Ethyl (S)-3-hydroxybutanoate
Yeast reduction, Enzyme inhibitor, Stereochemical control, ethyl 3-oxubutanoate, 834
Evernia prunastri
Immobilized enzymes, Immobilization, Orsellinate depside hydrolase, Lichens, 275
Excretion
Hairy root cultures, Plant cell bioreactors, Thiophenes, Two-liquid-phase systems, *Tagetes patula*, 487
Exoenzyme
Invertase, Glycoprotein, *Azotobacter chroococcum*, 267
Exoglycoprotein
Cell flotation, Foam, *Hansenula polymorpha*, Gel electrophoresis, 747
Expression cassette
Neurospora crassa, Inducible promoter, Gene expression, 400
Extracellular enzyme mutants
Coprinus bilanatus, Secondary hemothallism, 976
Extraction
Vitreoscilla hemoglobin, *Escherichia coli*, Partitioning, Purification, 788

Fermentation
Clostridium acetobutylicum, Solvent analysis, GC, ABE, VFA, 722
Jerusalem artichoke, Single cell protein, Ethanol, High-fructose syrup, 359
Lipase, Immobilized enzyme, Activity, Glass fiber, Empirical model, Acrylic, Tallow, *Thermomyces lanuginosus*, Separator, Screens, 956
Variable pathlength turbidimeter, Biomass, 450
Fermentation kinetics
Active dry yeast, *Saccharomyces cerevisiae*, Specific growth rate, Specific production rate, Viability, Solid-state fermentation, 2
Fermentation monitoring
Biosensor, Process control, 946
Filter paper/cellobiase ratio
Cellulases, Enzymatic profile, 104
Flocculate
Ureolytic cells, Urease, Adhered cotton cloth, Cellulosic surface, Immobilization, Urea effluent, Frame reactor, 935
Flocculation
Pichia stipitis, Diauxie, Ethanol fermentation, Xylose, 734
Flow cytometry
Hybridoma cells, Monoclonal antibody, Membrane reactor, High cell density, Electrorotation measurements, 873
Foam
Cell flotation, *Hansenula polymorpha*, Exoglycoprotein, Gel electrophoresis, 747
Formulation
Sclerotium cepivorum, Shelf life, Survival, Biocontrol, *Trichoderma*, *Gliocladium virens*, 636
Freeze-fracture electron microscopy
Pseudomonas oleovorans, *Two-liquid phase continuous culture*, *Poly*(β-hydroxyalkanoate), *n*-octane, 770
Fructooligosaccharide
Saccharomyces cerevisiae, Baking yeast, MAL-constitutive, 495
Fruit slops
Bioconversion, Fungi, 848
Fumarase
L-malic acid, *Saccharomyces cerevisiae*, Immobilization, Agarose, 991
Fungi
Fruit slops, Bioconversion, 848
Furfural
Acid-hydrolysed wood, *Klebsiella pneumoniae*, Inhibitors, Acetate, Sulfate, Phenolics, 2.3-butanediol, 110
Fusarium oxysporum
Ethanol fermentation, Cellulose, Straw, Crystallinity index, 272
Fusion protein
β-Glucosidase, Cellulose, Adsorption, Enzyme immobilization, stability, 59
Recombinent *E. coli*, Bubble column, Airlift tower loop reactor, 554

α-D-GalNAc-(1-4)-Ser
Glycosidases, Reversed hydrolysis, α-mannosidase, α-N-acetylgalactosaminidase, α-D-Man(1-4)-L-Ser, 781
β-Galactosidase
Bioreactor, Insect cells, Baculovirus, Serum-free medium, *Spodoptera frugiperda*, *Autographa californica*, 822
β-Galactosidase fusions
PEG4000/potassium phosphate, Aqueous two-phase partitioning, Affinity partitioning, Precipitation, 204

Gas
Enzyme, Lipase, *Candida rugosa*, Esterase, Hydrolysis, Water activity, Thin Film, Vapor, 370
GC
Clostridium acetobutylicum, Solvent analysis, ABE, VFA, Fermentation, 722
GDP-mannose dehydrogenase
Alginate biosynthesis, *Pseudomonas aeruginosa*, Enzyme overproduction, Genetically manipulated microorganisms, 385
Gel electrophoresis
Cell flotation, Foam, *Hansenula polymorpha*, Exoglycoprotein, 747
Gene cloning
Bacillus thuringiensis, Crystal toxin, Oligonucleotide probes, Hybridization methodology, 661
Gene expression
Neurospora crassa, Inducible promoter, Expression cassette, 400
Gene inactivation
Trichoderma reesei, Cellulases, Strain improvement, Hypercellulolytic mutant, Overexpression, 227
Genetically manipulated microorganisms
Alginate biosynthesis, *Pseudomonas aeruginosa*, Enzyme overproduction, GDP-mannose dehydrogenase, 385
Geotrichum candidum
Triacylglycerol hydrolase, Lipase, Microheterogeneity, Glycosylation, Substrate specificity, Crystallization, X-ray analysis, 840
Glass fiber
Lipase, Immobilized enzyme, Activity, Emperical model, Acrylic, Tallow, *Thermomyces lanuginosus*, Fermentation, Separator, Screens, 956
Gliocladium
Nutrition, Biocontrol, Minerals, C : N ratios, *Trichoderma*, 456
Gliocladium virens
Sclerotium cepivorum, Shelf life, Formulation, Survival, Biocontrol, *Trichoderma*, 636
β-Glucanase
Penicillium capsulatum, Multienzyme complex, Domains, β-glucosidase, Laminarinase, Lichenase, 470
β-1,3-Glucanase
Protease, *Oerskovia xanthineolytica*, Yeast lysis, 71
(1-3)-β-Glucanases
Yeast cell wall glucan, *Aspergillus niger*, 87
Glucoamylase
Aspergillus niger, Starch-binding domain, Adsorption, Elution, pH, Ionic strength, 982
Mass transfer, Enzymatic hydrolysis, Starch, Amylopectin, Glycogen, 142
Glucokinase
Cellulase, Cellobiohydrolase I, *Trichoderma reesei*, Catabolite repression, Hexokinase, 39
Gluconic acid
Sorbitol, Invertase, Oxidoreductase, *Zymomonas mobilis*, 920
Gluconate dehydrogenase
2-Ketogluconate, 2,5-diketogluconate,

Airlift reactor, *Gluconobacter oxydans*, 504
Gluconobacter oxydans
2-Ketogluconate, 2,5-diketogluconate, Gluconate dehydrogenase, Airlift reactor, 504
Alcohol dehydrogenase, asymmetric reduction, 9
Glucose-6-phosphate dehydrogenase
Baker's yeast, Permeabilization, Cetyltrimethylammonium bromide, Alcohol dehydrogenase, Hexokinase, 154
Yeast, Cell wall, Mechanical cell disruption, Protein excretion, Invertase, 665
Glucose oxidase
Coimmobilizate, Polyethylenimine, Yeast cells, Cotton thread, Adhesion, 508
β-Glucosidase
Cellulose, Fusion protein, Adsorption, Enzyme immobilization, Stability, 59
Penicillium capsulatum, Multienzyme complex, Domains, Laminarinase, β-glucanase, Lichenase, 470
Rumen fungus, Purification, 622
Glutamate oxidase
Amplification, Glutamic acid, Glutamic oxaloacetic transaminase, Hydrogen peroxide production, Substrate recycling, 116
Glutamic acid
Amplification, Glutamate oxidase, Glutamic oxaloacetic transaminase, Hydrogen peroxide production, Substrate recycling, 116
Glutamic oxaloacetic transaminase
Amplification, Glutamic acid, Glutamate oxidase, Hydrogen peroxide production, Substrate recycling, 116
Glutamic-pyruvic transaminase
Pyruvate oxidase, Lactic dehydrogenase, Enzyme activity sensor, 134
Glutaraldehyde
E. coli, Cyanuric chloride Penicillin amidase, 676
Glycerol 1-phosphate
Enzymatic synthesis, Immobilized alkaline phosphatase, Phosphorylation, Reversion, 19
Glycoenzymes
Concanavalin A, Immobilization, 290
Glycogen
Mass transfer, Enzymatic hydrolysis, Glucoamylase, Starch, Amylopectin, 142
Glycoprotein
Invertase, Exoenzyme, *Azotobacter chroococcum*, 267
Glycosidases
Reversed hydrolysis, α-mannosidase, α-N-acetylgalactosaminidase, α-D-Man(1-4)-L-Ser, α-D-GalNAc-(1.4)-Ser, 781
Glycosylation
Bacillus stearothermophilus, Amylase, Thermal stability, 164
Triacylglycerol hydrolase, Lipase, *Geotrichum candidum*, Microheterogeneity, Substrate specificity, Crystallization, X-ray analysis, 840
Growth
C. roseus cells, Immobilization, Carbon Dioxide, Viability, Respiration, Conductivity, 882
Growth factors
Riboflavin, *Ashbya gossypii*, 594
Growth kinetics
Hybridoma, Batch culture, Producing cells, Nonproducing cells, 690

Hairy root cultures
Plant cell bioreactors, Thiophenes, Two-liquid-phase systems, *Tagetes patula*, Excretion, 487
Hansenula polymorpha
Cell flotation, Foam, Exoglycoprotein, Gel electrophoresis, 747
Methylotrophic yeast, Dilution rates, Diauxic metabolism, 412
Hemicellulose hydrolysate
Acetic acid inhibition, D-xylose fermentation, *Pichia stipitis*, 82
Hexokinase
Baker's yeast, Permeabilization, Cetyltrimethylammonium bromide, Alcohol dehydrogenase, Glucose-6-phosphate dehydrogenase, 154
Cellulase, Cellobiohydrolase I, *Trichoderma reesei*, Catabolite repression, Glucokinase, 39
High cell density
Hybridoma cells, Monoclonal antibody, Membrane reactor, Flow cytometry, Electrorotation measurements, 873
High-fructose syrup
Jerusalem artichoke, Fermentation, Single cell protein, Ethanol, 359
High impeller speeds
Catharanthus roseus, Stirred-tank bioreactors, Impeller design, 801
Horseradish peroxidase
Lignin, Nonaqueous media, Copolymerization, Phenolic grafting, 964
Hybridization methodology
Bacillus thuringiensis, Crystal toxin, Oligonucleotide probes, Gene cloning, 661
Hybridoma
Growth kinetics, Batch culture, Producing cells, Nonproducing cells, 690
Hydrodynamic, Agitated bioreactor, Monoclonal antibodies, 913
Hybridoma cells
Monoclonal antibody, Membrane reactor, High cell density, Flow cytometry, Electrorotation measurements, 873
Hydrocortisone
Liposome, Microbial catalysis, *Arthrobacter*, 245
Steroid, Dehydrogenation, Immobilized cells, Cosolvents, 869
Hydrodynamic shear
Hybridoma, Agitated bioreactor, Monoclonal antibodies, 913
Hydrogen peroxide production
Amplification, Glutamic acid, Glutamate oxidase, Glutamic oxaloacetic transaminase, Substrate recycling, 116

Hydrogen production
Clostridium butyricum, D-xylose, Chemostat, 893
Hydrolases
Biocatalysis, Biphasic water-organic system, Stability, Reaction yield, 547
Hydrolysis
Enzyme, Lipase, *Candida rugosa*, Esterase, Water activity, Thin film, Vapor, Gas, 370
Hydrophobic chromatography
Penicillin acylase, Hydrophobic domain, 139
Hydrophobic domain
Penicillin acylase, Hydrophobic chromatography, 139
Hydroxyacid esters
Lipase, Enantioselectivity, Esterification, Transesterification, 655
Hypercellulolytic mutant
Trichoderma reesei, Cellulases, Strain improvement, Overexpression, Gene inactivation, 227

Immobilization
Concanavalin A, Glycoenzymes, 290
C. roseus cells, Growth, Carbon dioxide, Viability, Respiration, Conductivity, 882
Fumarase, L-malic acid, *Saccharomyces cerevisiae*, Agarose, 991
Immobilized enzymes, Orsellinate depside hydrolase, Lichens, *Evernia prunastri*, 275
Invertase, Encapsulation, Polyelectrolyte complexes, Cellulose sulfate/poly (dimethyldiallylammonium choloride), Kinetics, Stability, 240
Phanerochaete chrysosporium, Lignin peroxidase, Mn(II)-dependent peroxidase, Endoplasmic reticulum, Mitochondria, 727
Pichia stipitis, *Saccharomyces cerevisiae*, Diauxie, Ethanol fermentation, Xylose, Model, 530
Pyranose oxidase, *Phanerochaete chrysosporium*, Bioanalysis, 755
Ureolytic cells, Urease, Flocculate, Adhered cotton cloth, Cellulosic surface, Urea effluent, Frame reactor, 935
Immobilization-stabilization of penicillin G acylases
Penicillin G acylases, Competitive inhibitors of, Stabilization effect of competitive inhibitors, Enzyme-support multipoint covalent attachment, 210
Immobilized α-chymotrypsin
Enzyme catalysis, Transesterification, Continuous fixed bed reactor, 703
Immobilized Alkaline Phosphatase
Enzymatic synthesis, Glycerol 1-phosphate, Phosphorylation, Reversion, 19
Immobilized bacteria
Detergents, Surfactants, Biodegradation, Industrial wastes, 338
Immobilized cell reactor
Ethanol bioreactor, Ethanol production, Continuous ethanol production, Continuous fermentation, Aerated fermentation, Yeast, 390

Immobilized cells
Citrobacter sp., Phosphatase, Diffusional constraints, 716
Mass transfer effects, Lactase, Penicillin acylase, 127
Steroid, Dehydrogenation, Hydrocortisone, Cosolvents, 869
Immobilized enzyme
Lipase, Activity, Glass fiber, Emperical model, Acrylic, Tallow, *Thermomyces lanuginosus*, Fermentation, Separator, Screens, 956
Shear, Tubular reactor, Kinetics, Mass transfer, 610
Sialic acid, Neuraminidase, Neu-5-Ac lyase, Pyruvate oxidase, Peroxidase, 45
Substrate inhibition, Multiple steady states, Diffusion, 960
Immobilized enzymes
Enzyme thermal inactivation, Enzyme chemical inactivation, Enzyme stabilization, Thermal equivalence, 353
Immobilized mycelium
Lignin peroxidase, *Phanerochaete chrysosporium*, Nitrogen limitation, Nitrogen sufficiency, 404
Impeller design
Catharanthus roseus, Stirred-tank bioreactors, High impeller speeds, 801
Indole alkaloids
Plant cell cultures, 643, 760
Inducible promoter
Neurospora crassa, Gene expression, Expression cassette, 400
Induction
Tritirachium album Limber, Proteinases R, T, and K, Thermal stability, SDS, 66
Industrial wastes
Detergents, Surfactants, Immobilized bacteria, Biodegradation, 338
Inhibition
Nitrile hydratase, Acrylonitrile, Acrylamide, Adaptation, Tolerance, *Brevibacterium* sp. CH2, 53
Inhibitors
Acid-hydrolysed wood, *Klebsiella pneumoniae*, Acetate, Sulfate, Furfural, Phenolics, 2,3-butanediol, 110
Insect cells
Bioreactor, Baculovirus, β-galactosidase, Serum-free medium, *Spodoptera frugiperda*, *Autographa californica*, 822
Interesterification
Lipase, Enzyme kinetics, Triglycerides, 98
Invertase
Exoenzyme, Glycoprotein, *Azotobacter chroococcum*, 267
Gluconic acid, Sorbitol, Oxidoreductase, *Zymomonas mobilis*, 920
Immobilization, Encapsulation, Polyelectrolyte complexes, Cellulose sulfate/poly (dimethyldiallylammonium choloride), Kinetics, Stability, 240
Yeast, Cell wall, Mechanical cell disruption, Protein excretion, Glucose-6-phosphate-dehydrogenase, 665
Ionic strength
Aspergillus niger, Glucoamylase, Starch-binding domain, Adsorption, Elution, pH, 982
Isopropanol
Lipase, Alcoholysis, Stability, Ethanol, 544
Jerusalem artichoke
Fermentation, Single cell protein, Ethanol, High-fructose syrup, 359

k cat
Trypsin, Esterase, Amidase, structure, Km, 320
2-keto-3-deoxy-D-galactonate aldolase
D-Galactonate dehydratase, *Aspergillus terreus*, 930
2-Ketogluconate
2,5-diketogluconate, Gluconate dehydrogenase, Airlift reactor, *Gluconobacter oxydans*, 504
Kinetic model
Lactic acid, Product inhibition, Substrate inhibition, 314
Kinetics
Immobilization, Invertase, Encapsulation, Polyelectrolyte complexes, Cellulose sulfate/poly (dimethyldiallylammonium), Stability, 240
Microwaves, Pasteurization, Reactor, Modeling, 419
Rumen microorganisms, Methane, Volatile fatty acids, 925
Shear, Immobilized enzyme, Tubular reactor, Mass transfer, 610
Spontaneous fermentation, Mixed culture, 252
Klebsiella pneumoniae
Acid-hydrolysed wood, Inhibitors, Acetate, Sulfate, Furfural, Phenolics, 2,3-butanediol, 110
K_m
Trypsin, Esterase, Amidase, structure, k_{cat}, 320

Laccase
Lignin degradation, *Rigidoporus lignosus*, Mn peroxidase, 478
Laccases
Dechlorination, Chlorophenolic compounds, *Trametes* (*Coriolus*) *versicolor*, 194
Lactase
Immobilized cells, Mass transfer effects, Penicillin acylase, 127
Lactic acid
Deproteinized whey, *Lactobacillus casei*, *Lactococcus lactis*, Coimmobilized mixed culture, 33
Kinetic model, Product inhibition, Substrate inhibition, 314
Lactobacillus helveticus, Whey permeate, Cell-recycle reactor, 811
Lactic dehydrogenase
Pyruvate oxidase, Glutamic-pyruvic transaminase, Enzyme activity sensor, 134
Lactobacillus casei
Lactic Acid, Deproteinized whey, *Lactococcus lactis*, Coimmobilized mixed culture, 33
Lactobacillus helveticus
Lactic acid, Whey permeate, Cell-recycle reactor, 811
Lactococcus lactis
Lactic Acid, Deproteinized whey, *Lactobacillus casei*, Coimmobilized mixed culture, 33
Lactose
Modeling, Enzyme electrode, 672
Laminarin
Penicillum capsulatum, Solid-state culture, Endo-β-glucanase, Barley β-glucan, Lichenan, CM-cellulose, 462
Laminarinase
Penicillium capsulatum, Multienzyme complex, Domains, β-glucosidase, β-glucanase, Lichenase, 470
Lichenan
Penicillum capsulatum, Solid-state culture, Endo-β-glucanase, Barley β-glucan, Laminarin, CM-cellulose, 462
Lichenase
Penicillium capsulatum, Multienzyme complex, Domains, β-glucosidase, Laminarinase, β-glucanase, 470
Lichens
Immobilized enzymes, Immobilization, Orsellinate depside hydrolase, *Evernia prunastri*, 275
Lignin
Horseradish peroxidase, Nonaqueous media, Copolymerization, Phenolic grafting, 964
Ligninase
Azo dyes, *Phanerochaete chrysosporium*, *Streptomyces*, Manganese peroxidase, Biodegradation, Decolorization, 378
Lignin degradation
Rigidoporus lignosus, Laccase, Mn peroxidase, 478
Ligninolysis
Lignin peroxidase, *Phanerochaete chrysosporium*, White rot, 15
Lignin peroxidase
Ligninolysis, *Phanerochaete chrysosporium*, White rot, 15
Phanerochaete chrysosporium, Immobilized mycelium, Nitrogen limitation, Nitrogen sufficiency, 404
Phanerochaete chrysosporium, Mn(II)-dependent peroxidase, Immobilization, Endoplasmic reticulum, Mitochondria, 727
Lipase
Alcoholysis, Stability, Ethanol, Isopropanol, 544
Carbohydrate ester, Organic solvent catalysis, Esterification, Membrane reactor, 565
Enantioselectivity, Hydroxyacid esters, Esterification, Transesterification, 655
Enzyme, *Candida rugosa*, Esterase, Hydrolysis, Water activity, Thin film, Vapor, Gas, 370
Esterase, Cholesterol esterase, *Pseudomonas*, *Acinetobacter*, Wool grease, Wool-scour effluent, 740
Immobilized enzyme, Activity, Glass fiber, Empirical model, Acrylic, Tallow, *Thermomyces lanuginosus*, Fermentation, Separator, Screens, 956
Interesterification, Enzyme kinetics, Triglycerides, 98
Reductive alkylation, Esterolytic, Estrification, 597

Sugar-fatty acid esters, Solvent-free synthesis, 796
Supercritical, Carbon dioxide, Ester, 221
Triacylglycerol hydrolase, *Geotrichum candidum*, Microheterogeneity, Glycosylation, Substrate specificity, Crystallization, X-ray analysis, 840
Lipases
Mucor, Macrocyclic lactones, Reaction environment, 589
Lipopolysaccharide
Myxococcus xanthus, Anticoagulant, 327
Liposome
Microbial catalysis, *Arthrobacter*, Hydrocortisone, 245
Liver
Diacetyl, Diacetyl reductase, Diketone, Enzyme assay, Bacteria, 171
L-malic acid
Fumarase, *Saccharomyces cerevisiae*, Immobilization, Agarose, 991

Macrocyclic
Mucor, Lipases, Reaction environment, 589
MAL-constitutive
Saccharomyces cerevisiae, Baking yeast, Fructooligosaccharide, 495
α-D-Man-(1-4)-L-Ser
Glycosidases, Reversed hydrolysis, α-mannosidase, α-N-acetylgalactosaminidase, α-D-GalNAc-(1.4)-Ser, 781
Manganese peroxidase
Azo dyes, *Phanerochaete chrysosporium*, *Streptomyces*, Ligninase, Biodegradation, Decolorization, 378
Glycosidases, Reversed hydrolysis, α-N-acetylgalactosaminidase, α-D-Man(1-4)-L-Ser, α-D-GalNAc-(1.4)-Ser, 781
Mass transfer
Enzymatic hydrolysis, Glucoamylase, Starch, Amylopectin, Glycogen, 142
Shear, Immobilized enzyme, Tubular reactor, Kinetics, 610
Mass transfer effects
Immobilized cells, Lactase, Penicillin acylase, 127
Mechanical cell disruption
Yeast, Cell wall, Protein excretion, Invertase, Glucose-6-phosphate-dehydrogenase, 665
Membrane bioreactor
Dates, *Saccharomyces cerevisiae*, *Acetobacter aceti*, Ethanol, Vinegar, Acetic acid, 257
Membrane permeability
Saccharomyces cerevisiae, Pluronic F-68, Membrane structure, Patch-clamp analysis, 148
Membrane reactor
Hybridoma cells, Monoclonal antibody, High cell density, Flow cytometry, Electrorotation measurements, 873
Lipase, Carbohydrate ester, Organic solvent catalysis, Esterification, 565
Membrane structure
Saccharomyces cerevisiae, Pluronic F-68, Membrane permeability, Patch-clamp analysis, 148
Methane
Rumen microorganisms, Kinetics, Volatile fatty acids, 925
Methylketones
Yeast, Biotransformation, Enzymes, Enantioselectivity, *Saccharomyces cerevisiae*, 817
Methylotrophic yeast
Hansenula polymorpha, Dilution rates, Diauxic metabolism, 412
Microbial catalysis
Liposome, *Arthrobacter*, Hydrocortisone, 245
Microbial reduction
Stereospecificity, Calcium antagonists, 906
Microencapsulation
Urease, activity, 309
Microheterogeneity
Triacylglycerol hydrolase, Lipase, *Geotrichum candidum*, Glycosylation, Substrate specificity, Crystallization, X-ray analysis, 840
Microwaves
Pasteurization, Reactor, Modeling, Kinetics, 419
Minerals
Nutrition, Biocontrol, C : N ratios, *Trichoderma*, *Gliocladium*, 456
Mitochondria
Phanerochaete chrysosporium, Lignin peroxidase, Mn(II)-dependent peroxidase, Immobilization, Endoplasmic reticulum, 727
Mixed culture
Spontaneous fermentation, Kinetics, 252
Mn(II)-dependent peroxidase
Phanerochaete chrysosporium, Lignin peroxidase, Immobilization, Endoplasmic reticulum, Mitochondria, 727
Mn peroxidase
Lignin degradation, *Rigidoporus lignosus*, Laccase, 478
Model
Pichia stipitis, Diauxie, Xylose, Ethanol fermentation, Oxygen limitation, 648
Pichia stipitis, *Saccharomyces cerevisiae*, Diauxie, Immobilization, Ethanol fermentation, Xylose, 530
Modeling
Aqueous two-phase systems, Partition, Protein recovery, 24
Enzyme electrode, Lactose, 672
Microwaves, Pasteurization, Reactor, Kinetics, 419
Monoclonal antibodies
Hydrodynamic, Hybridoma, Agitated bioreactor, 913
Monoclonal antibody
Hybridoma cells, Membrane reactor, High cell density, Flow cytometry, Electrorotation measurements, 873
Mucor
Lipases, Macrocyclic lactones, Reaction environment, 589
Multienzyme complex
Penicillium capsulatum, Domains, β-glucosidase, Laminarinase, β-glucanase, Lichenase, 470
Multiple steady states
Immobilized enzyme, Substrate inhibition, Diffusion, 960
Myxococcus xanthus
Anticoagulant, Lipopolysaccharide, 327

Neu-5-Ac lyase
Sialic acid, Immobilized enzyme, Neuraminidase, Pyruvate oxidase, Peroxidase, 45
Neuraminidase
Sialic acid, Immobilized enzyme, Neu-5-Ac lyase, Pyruvate oxidase, Peroxidase, 45
Neurospora crassa
Inducible promoter, Gene expression, Expression cassette, 400
Nitrile hydratase
Acrylonitrile, Acrylamide, Adaptation, Tolerance, Inhibition, *Brevibacterium* sp. CH2, 53
Nitrogen limitation
Lignin peroxidase, *Phanerochaete chrysosporium*, Immobilized limitation, Nitrogen sufficiency, 404
Nitrogen sufficiency
Lignin peroxidase, *Phanerochaete chrysosporium*, Immobilized limitation, Nitrogen limitation, 404
N-(N-acetyl-L-phenylalanyl)glycinamide
Papain, N-(N-acetyl-L-phenylalanyl)glycinenitrile, Enzyme inhibitor, 13C-NMR, 15N-NMR, 408
N-(N-acetyl-L-phenylalanyl)glycinenitrile
Papain, N-(N-acetyl-L-phenylalanyl)glycinamide, Enzyme inhibitor, 13C-NMR, 15N-NMR, 408
13C-NMR
Papain, N-(N-acetyl-L-phenylalanyl)glycinenitrile, N-(N-acetyl-L-phenylalanyl)glycinamide, Enzyme inhibitor, 15N-NMR, 408
15N-NMR
Papain, N-(N-acetyl-L-phenylalanyl)glycinenitrile, N-(N-acetyl-L-phenylalanyl)glycinamide, Enzyme inhibitor, 13C-NMR, 408
Nocardia sp.
Optically pure 1,2-epoxyalkanes, Epoxide degradation, Enantioselective degradation, 306
n-octane
Pseudomonas oleovorans, *Two-liquid phase continuous culture*, *Poly*(β-hydroxyalkanoate), Freeze-fracture electron microscopy, 770
Nonaqueous media
Horseradish peroxidase, Lignin, Copolymerization, Phenolic grafting, 964
Nonproducing cells
Hybridoma, Growth kinetics, Batch culture, Producing cells, 690
Nostoc muscorum
Cyanobacterium, Antibiotic, Optimization, 76
Nutrition
Biocontrol, Minerals, C : N ratios, *Trichoderma*, *Gliocladium*, 456

Oerskovia xanthineolytica
β-1,3-Glucanase, Protease, Yeast lysis, 71

Oligonucleotide probes
Bacillus thuringiensis, Crystal toxin, Hybridization methodology, Gene cloning, 661
On-line immunoassay
Turbidimetric assay, Bioprocess monitoring, Antithrombin III assay, Pullulanase assay, 969
Optically pure 1,2-epoxyalkanes
Epoxide degradation, enantioselective degradation, *Nocardia* sp., 306
Optimization
Cyanobacterium, *Nostoc muscorum*, Antibiotic, 76
Orange leaves
Carboxypeptidase c, Peptide synthesis, 262
Organic Solvent
Protease immobilization, Porous chitosan beads, Ester synthesis, Peptide synthesis, 584
Organic solvent catalysis
Lipase, Carbohydrate ester, Esterification, Membrane reactor, 565
Organic solvents
Cyclodextrin glycosyltransferase (CGTase), Cyclodextrins, Dextrinizing activity, *Bacillus* sp., 499
Subtilisin, Ultrasound irradiation, 123
Orsellinate depside hydrolase
Immobilized enzymes, Immobilization, Lichens, *Evernia prunastri*, 275
Overexpression
Trichoderma reesei, Cellulases, Strain improvement, Hypercellulolytic mutant, Gene inactivation, 227
Oxidoreductase
Gluconic acid, Sorbitol, Invertase, *Zymomonas mobilis*, 920
Oxygen limitation
Pichia stipitis, Diauxie, Xylose, Ethanol fermentation, Model, 648

Papain
N-(N-acetyl-L-phenylalanyl)glycinenitrile, N-(N-acetyl-L-phenylalanyl)glycinamide, Enzyme inhibitor, 13C-NMR,15N-NMR, 608
Partition
Aqueous two-phase systems, Protein recovery, Modeling, 24
Partitioning
Vitreoscilla Hemoglobin, *Escherichia coli*, Extraction, Purification, 788
Pasteurization
Microwaves, Reactor, Modeling, Kinetics, 419
Patch-clamp analysis
Saccharomyces cerevisiae, Pluronic F-68, Membrane permeability, Membrane structure, 148
PEG4000/potassium phosphate
β-Galactosidase fusions, Aqueous two-phase partitioning, Affinity partitioning, Precipitation, 204
PEG molecular weight
Aqueous two-phase systems, Thaumatin, Effect of NaCl, Purification, *E.coli* homogenate proteins, BSA, Reversed phase HPLC analysis, 629
Penicillin acylase
Hydrophobic chromatography, Hydrophobic domain, 139
Immobilized cells, Mass transfer effects, Lactase, 127
Penicillin amidase
E. coli, Cyanuric chloride, Glutaraldehyde, 676
Penicillin G acylases
Competitive inhibitors of, Stabilizing effect of competitive inhibitors, Immobilization-stabilization of penicillin G acylases, Enzyme-support multipoint covalent attachment, 210
Penicillium capsulatum
Multienzyme complex, Domains, β-glucosidase, Laminarinase, β-glucanase, Lichenase, 470
Solid-state culture, Endo-β-glucanase, Barley β-glucan, Lichenan, Laminarin, CM-cellulose, 462
Peptide synthesis
Carboxypeptidase c, Orange leaves, 262
Protease immobilization, Porous chitosan beads, Ester synthesis, Organic solvent, 584
Peptide synthesis by stabilized trypsin
Enzymes in organic synthesis, Design of kinetically controlled synthesis, Design of thermodynamically controlled synthesis, Enzymes in organic solvents, 573
Permeabilization
Baker's yeast, Cetyltrimethylammonium bromide, Alcohol dehydrogenase, Glucose-6-phosphate dehydrogenase, Hexokinase, 154
Peroxidase
Sialic acid, Immobilized enzyme, Neuraminidase, Neu-5-Ac lyase, Pyruvate oxidase, 45
pH
Aspergillus niger, Glucoamylase, Starch-binding domain, Adsorption, Elution, Ionic strength, 982
Phanerochaete chrysosporium
Azo dyes, *Streptomyces*, Ligninase, Manganese peroxidase, Biodegradation, Decolorization, 378
Ligninolysis, Lignin peroxidase, White rot, 15
Lignin peroxidase, Immobilized mycelium, Nitrogen limitation, Nitrogen sufficiency, 404
Lignin peroxidase, Mn(II)-dependent peroxidase, Immobilization, Endoplasmic reticulum, Mitochondria, 727
Pyranose oxidase, Immobilization, Bioanalysis, 755
Phenolic grafting
Horseradish peroxidase, Lignin, Nonaqueous media, Copolymerization, 964
Phenolics
Acid-hydrolysed wood, *Klebsiella pneumoniae*, Inhibitors, Acetate, Sulfate, Furfural, 2,3-butanediol, 110
Phosphatase
Citrobacter sp., Immobilized cells, Diffusional constraints, 716
Phosphorylation
Enzymatic synthesis, Immobilized alkaline phosphatase, Glycerol 1-phosphate, Reversion, 19
Pichia stipitis
Acetic acid inhibition, D-xylose fermentation, Hemicellulose hydrolysate, 82
Diauxie, Flocculation, Ethanol fermentation, Xylose, 734
Diauxie, Xylose, Ethanol fermentation, Oxygen limitation, Model, 648
Saccharomyces cerevisiae, Diauxie, Immobilization, Ethanol fermentation, Xylose, Model, 530
Saccharomyces cerevisiae, Ethanol fermentation, Xylose, Diauxie, Reactors in series, 828
Plant cell bioreactors
Hairy root cultures, Thiophenes, Two-liquid-phase systems, *Tagetes patula*, Excretion, 487
Plant cell cultures
Indole alkaloids, 643, 760
Pluronic F-68
Saccharomyces cerevisiae, Membrane permeability, Membrane structure, Patch-clamp analysis, 148
Poly(β-hydroxyalkanoate)
Pseudomonas oleovorans, Two-liquid-phase continuous culture, *n*-octane, Freeze-fracture electron microscopy, 770
Polyclonal
Trichoderma harzianum, Protein, Antigens, Serology, Biomass, Straw, Antibodies, 537
Polyelectrolyte complexes
Immobilization, Invertase, Encapsulation, Cellulose sulfate/poly (dimethyldiallylammonium choloride), Kinetics, Stability, 240
Polyethyleneimine
Enzyme immobilization, Cell immobilization, 858
Polyethylenimine
Coimmobilizate, Yeast cells, Glucose oxidase, Cotton thread, Adhesion, 508
Porous chitosan beads
Protease immobilization, Ester synthesis, Peptide synthesis, Organic solvent, 584
Precipitation
β-Galactosidase fusions, PEG4000/potassium phosphate, Aqueous two-phase partitioning, Affinity partitioning, 204
Process control
Biosensor, Fermentation monitoring, 946
Producing cells
Hybridoma, Growth kinetics, Batch culture, Nonproducing cells, 690
Product inhibition
Lactic acid, Kinetic model, Substrate inhibition, 314
Protease
β-1,3-Glucanase, *Oerskovia xanthineolytica*, Yeast lysis, 71
Protease immobilization
Porous chitosan beads, Ester synthesis, Peptide synthesis, Organic solvent, 584

Protein
Trichoderma harzianum, Antigens, Serology, Biomass, Straw, Polyclonal, Antibodies, 537
Proteinases R, T, and K
Tritirachium album Limber, Induction, Thermal stability, SDS, 66
Protein excretion
Yeast, Cell wall, Mechanical cell disruption, Invertase, Glucose-6-phosphate-dehydrogenase, 665
Protein modification
Enzyme stabilization, Alanine aminotransferase, Bis-imidates, Succinic anhydride, 234
Protein recovery
Aqueuous two-phase systems, Partition, Modeling, 24
Pseudomonas
Esterase, Lipase, Cholesterol esterase, *Acinetobacter*, Wool grease, Wool-scour effluent, 740
Pseudomonas aeruginosa
Alginate biosynthesis, Enzyme overproduction, GDP-mannose dehydrogenase, Genetically manipulated microorganisms, 385
Pseudomonas oleovorans
Two-liquid-phase continuous culture, *Poly*(β-hydroxyalkanoate), *n*-octane, Freeze-fracture electron microscopy, 770
Pseudomonas sp.
Sorbitol dehydrogenase, Characterization, Sorbitol transformation, 332
Pullulanase assay
On-line immunoassay, Turbidimetric assay, Bioprocess monitoring, Antithrombin III assay, 969
Pulsed amperometric detection
Acetyl-4-O-methylglucuronosylan, Xylooligomers, Xylanase, Acetyl xylan esterase, 483
Purification
Aqueous two-phase systems, Thaumatin, PEG molecular weight, Effect of NaCl, *E. coli* homogenate proteins, BSA, Reversed phase HPLC analysis, 629
Rumen fungus, β-glucosidase, 622
Vitreoscilla hemoglobin, *Escherichia coli*, Partitioning, Extraction, 788
Pyranose oxidase
Immobilization, *Phanerochaete chrysosporium*, Bioanalysis, 755
Pyrogenic lipopolysaccharides
Colloidal zirconia, *E. coli* pyrogen removal, 708
Pyruvate oxidase
Lactic dehydrogenase, Glutamic-pyruvic transaminase, Enzyme activity sensor, 134
Sialic acid, Immobilized enzyme, Neuraminidase, Neu-5-Ac lyase, Peroxidase, 45

Reaction environment
Mucor, Lipases, Macrocyclic lactones, 589
Reaction yield
Biocatalysis, Hydrolase, Biphasic water-organic system, Stability, 547
Reactor
Microwaves, Pasteurization, Modeling, Kinetics, 419
Reactors in series
Pichia stipitis, *Saccharomyces cerevisiae*, Ethanol fermentation, Xylose, Diauxie, 828
Recombinant *E. coli*
Fusion protein, Bubble column, Airlift tower loop reactor, 554
Reduction
Bakers' yeast, Diastereoselectivity, α-zeranole, α-zeralenole, 344
Reductive alkylation
Lipase, Esterolytic, Esterification, 597
Respiration
C. roseus cells, Immobilization, Growth, Carbon dioxide, Viability, Conductivity, 882
Reversed hydrolysis
Glycosidases, α-mannosidase, α-N-acetylgalactosaminidase, α-D-Man(1-4)-L-Ser, α-D-GalNAc-(1.4)-Ser, 781
Reversed phase HPLC analysis
Aqueous two-phase systems, Thaumatin, PEG molecular weight, Effect of NaCl, Purification, *E. coli* homogenate proteins, BSA, 629
Reversion
Enzymatic synthesis, Immobilized alkaline phosphatase, Glycerol 1-phosphate, Phosphorylation, 19
Riboflavin
Ashbya gossypii, Growth factors, 594
Rigidorporus lignosus
Lignin degradation, Laccase, Mn peroxidase, 478
Root cultures
Agrobacterium rhizogenes, Bioreactor, *Trigonella foenum-graecum*, Diosgenin, 697
Rumen fungus
β-glucosidase, Purification, 622
Rumen microorganisms
Kinetics, Methane, Volatile fatty acids, 925

Saccharomyces cerevisiae
Active dry yeast, fermentation kinetics, specific growth rate, specific production rate, viability, solid-state fermentation, 2
Baking yeast, Fructooligosaccharide, MAL-constitutive, 495
Dates, *Acetobacter aceti*, Ethanol, Vinegar, Acetic acid, Membrane bioreactor, 257
Fumarase, L-malic acid, Immobilization, Agarose, 991
Pichia stipitis, Diauxie, Immobilization, Ethanol fermentation, Xylose, Model, 530
Pichia stipitis, Ethanol fermentation, Xylose, Diauxie, Reactors in series, 828
Pluronic F–68, Membrane permeability, Membrane structure, Patch-clamp analysis, 148
Yeast, Biotransformation, Enzymes, Enantioselectivity, Methylketones, 817
Sclerotium cepivorum
Shelf life, Formulation, Survival, Biocontrol, *Trichoderma*, *Gliocladium virens*, 636
Screens
Lipase, Immobilized enzyme, Activity, Glass fiber, Empirical model, Acrylic, Tallow, *Thermomyces lanuginosus*, Fermentation, Separator, 956
SDS
Tritirachium album Limber, Induction, Proteinases R, T, and K, Thermal stability, 66
Secondary homothallism
Coprinus bilanatus, Extracellular enzyme mutants, 976
Separator
Lipase, Immobilized enzyme, Activity, Glass fiber, Empirical model, Acrylic, Tallow, *Thermomyces lanuginosus*, Fermentation, Screens, 956
Serology
Trichoderma harzianum, Protein, Antigens, Biomass, Straw, Polyclonal, Antibodies, 537
Serum-free medium
Bioreactor, Insect cells, Baculovirus, β-galactosidase, *Spodoptera frugiperda*, *Autographa californica*, 822
Shear
Immobilized enzyme, Tubular reactor, Kinetics, Mass transfer, 610
Shear stress
Catharanthus roseus, Bioreactor, Alkaloid, Baffles, 296
Shelf life
Sclerotium cepivorum, Formulation, Survival, Biocontrol, *Trichoderma*, *Gliocladium virens*, 636
Sialic acid
Immobilized enzyme, neuraminidase, Neu-5-Ac lyase, Pyruvate oxidase, Peroxidase, 45
Single cell protein
Jerusalem artichoke, Fermentation, Ethanol, High-fructose syrup, 359
Solid-state culture
Penicillum capsulatum, Endo-β-glucanase, Barley β-glucan, Lichenan, Laminarin, CM-cellulose, 462
Solid-state fermentation
Active dry yeast, *Saccharomyces cerevisiae*, fermentation kinetics, specific growth rate, specific production rate, viability, 2
Solvent analysis
Clostridium acetobutylicum, GC, ABE, VFA, Fermentation, 722
Solvent-free synthesis
Sugar-fatty acid esters, Lipase, 796
Sorbitol
Glucomic acid, Invertase, Oxidoreductase, *Zymomonas mobilis*, 920
Sorbitol dehydrogenase
Pseudomonas sp., Characterization, Sorbitol transformation, 332
Sorbitol transformation
Pseudomonas sp., Sorbitol dehydrogenase, Characterization, 332
Specific growth rate
Active dry yeast, *Saccharomyces cerevisiae*, Fermentation kinetics,

Specific production rate, Viability, Solid-state fermentation, 2
Specific production rate
Active dry yeast, *Saccharomyces cerevisiae*, Fermentation kinetics, Specific growth rate, Viability, Solid-state fermentation, 2
Spentwash
Biomass, Distillery waste, Carbon dioxide, Volatile acids, 179
Spodoptera frugiperda
Bioreactor, Insect cells, Baculovirus, β-galactosidase, Serum-free medium, *Autographa californica*, 822
Spontaneous fermentation
Mixed culture, Kinetics, 252
Stability
β-Glucosidase, Cellulose, Fusion protein, Adsorption, Enzyme immobilization, 59
Biocatalysis, Hydrolase, Biphasic water-organic system, Reaction yield, 547
Immobilization, Invertase, Encapsulation, Polyelectrolyte complexes, Cellulose sulfate/poly (dimethyldiallylammonium), Kinetics, 240
Lipase, Alcoholysis, Ethanol, Isopropanol, 544
Stabilization
Enzymes, Antibodies, Amylases, Subtilisin, 424
Stabilizing effect of competitive inhibitors
Penicillin G acylases, Competitive inhibitors of, Immobilization of penicillin G acylases, Enzyme-support multipoint covalent attachment, 210
Starch
Mass transfer, Enzymatic hydrolysis, Glucoamylase, Amylopectin, Glycogen, 142
Starch-binding domain
Aspergillus niger, Glucoamylase, Adsorption, Elution, pH, Ionic strength, 982
Stereochemical control
Yeast reduction, Enzyme inhibitor, Ethyl 3-oxobutanoate, Ethyl (S)-hydroxy-butanoate, 834
Stereospecificity
Microbial reduction, Calcium antagonists, 906
Steroid
Dehydrogenation, Hydrocortisone, Immobilized cells, Cosolvents, 869
Stirred-tank bioreactors
Catharanthus roseus, High impeller speeds, Impeller design, 801
Strain improvement
Trichoderma reesei, Cellulases, Hypercellulolytic mutant, Overexpression, Gene inactivation, 227
Straw
Fusarium oxysporum, Ethanol fermentation, Cellulose, Crystallinity index, 272
Trichoderma harzianum, Protein, Antigens, Serology, Biomass, Polyclonal, Antibodies, 537
Streptomyces
Azo dyes, *Phanerochaete chrysosporium*, Ligninase, Manganese peroxidase, Biodegradation, Decolorization, 378
Structure
Trypsin, Esterase, Amidase, k_{cat}, K_m, 320
Substrate inhibition
Immobilized enzyme, Multiple steady states, Diffusion, 960
Lactic acid, Kinetic model, Product inhibition, 314
Substrate recycling
Amplification, Glutamic acid, Glutamate oxidase, Glutamic oxaloacetic transaminase, Hydrogen peroxide production, 116
Triacylglycerol hydrolase, Lipase, *Geotrichum candidum*, Microheterogeneity, Glycosylation, Crystallization, X-ray analysis, 840
Subtilisin
Organic solvents, Ultrasound irradiation, 123
Stabilization, Enzymes, Antibodies, Amylases, 424
Succinic anhydride
Enzyme stabilization, Protein modification, Alanine aminotransferase, Bis-imidates, 234
Sugar-fatty acid esters
Lipase, Solvent-free synthesis, 796
Sulfate
Acid-hydrolysed wood, *Klebsiella pneumoniae*, Inhibitors, Acetate, Furfural, Phenolics, 2,3-butanediol, 110
Supercritical
Carbon dioxide, Lipase, Ester, 221
Surfactants
Detergents, Immobilized bacteria, Biodegradation, Industrial wastes, 338
Survival
Sclerotium cepivorum, Shelf life, Formulation, Biocontrol, *Trichoderma*, *Gliocladium virens*, 636

Tagetes patula
Hairy root cultures, Plant cell bioreactors, Thiophenes, Two-liquid-phase systems, Excretion, 487
Tallow
Lipase, Immobilized enzyme, Activity, Glass fiber, Empirical model, Acrylic, *Thermomyces lanuginosus*, Fermentation, Separator, Screens, 956
Thaumatin
Aqueous two-phase systems, PEG molecular weight, Effect of NaCl, Purification, *E. coli* homogenate proteins, BSA, Reversed phase HPLC analysis, 629
Thermal equivalence
Enzyme thermal inactivation, Enzyme chemical inactivation, Enzyme stabilization, Immobilized enzymes, 353
Thermal stability
Bacillus stearothermophilus, Amylase, Glycosylation, 164
Tritirachium album Limber, Induction, Proteinases R, T, and K, SDS, 66
Thermomyces lanuginosus
Lipase, Immobilized enzyme, Activity, Glass fiber, Empirical model, Acrylic, Tallow, Fermentation, Separator, Screens, 956
Thermophilic Bacillus
Thermostable carboxylesterase, 158
Thermostability
β-Galactosidase, *Aspergillus fonsecaeus*, 349
Thermostable carboxylesterase
Thermophilic Bacillus, 158
Thin film
Enzyme, Lipase, *Candida rugosa*, Esterase, Hydrolysis, Water activity, Vapor, Gas, 370
Thiophenes
Hairy root cultures, Plant cell bioreactors, Two-liquid-phase systems, *Tagetes patula*, Excretion, 487
Tolerance
Nitrile hydratase, Acrylonitrile, Acrylamide, Adaptation, Inhibition, *Brevibacterium* sp. CH2, 53
Trametes (*Coriolus*) *versicolor*
Dechlorination, Chlorophenolic compounds, Laccases, 194
Enzyme catalysis, Immobilized α-chymotrypsin, Continuous fixed bed reactor, 703
Lipase, Enantioselectivity, Hydroxyacid esters, Esterification, 655
Triacylglycerol hydrolase
Lipase, *Geotrichum candidum*, Microheterogeneity, Glycosylation, Substrate specificity, Crystallization, X-ray analysis, 840
Trichoderma
Nutrition, Biocontrol, Minerals, C : N ratios, *Gliocladium*, 456
Sclerotium cepivorum, Shelf life, Formulation, Survival, Biocontrol, *Gliocladium virens*, 636
Trichoderma harzianum
Protein, Antigens, Serology, Biomass, Straw, Polyclonal, Antibodies, 537
Trichoderma reesei
Cellulase, Cellobiohydrolase I, Catabolite repression, Hexokinase, Glucokinase, 39
Cellulases, Strain improvement, Hypercellulolytic mutant, Overexpression, Gene inactivation, 227
Triglycerides
Lipase, Interesterification, Enzyme kinetics, 98
Trigonella foenum-graecum
Agrobacterium rhizogenes, Bioreactor, Root cultures, Diosgenin, 697
Tritirachium album Limber
Induction, Proteinases R, T, and K, Thermal stability, SDS, 66
Trypsin
Esterase, Amidase, Structure, k_{cat}, K_m, 320
Tubular reactor
Shear, Immobilized enzyme, Kinetics, Mass transfer, 610
Turbidimetric assay
On-line immunoassay, Bioprocess monitoring, Antithrombin III assay, Pullulanase assay, 969
Two-liquid-phase continuous culture
Pseudomonas oleovorans, *Poly*(β-hydroxyalkanoate), *n*-octane, Freeze-fracture electron microscopy, 770

Two-liquid-phase systems
Hairy root cultures, Plant cell bioreactors, Thiophenes, *Tagetes patula*, Excretion, 487

Ultrasound irradiation
Subtilisin, Organic solvents, 123
Urea effluent
Ureolytic cells, Urease, Flocculate, Adhered cotton cloth, Cellulosic surface, Immobilization, Frame reactor, 935
Urease
Microencapsulation, activity, 309
Ureolytic cells, Flocculate, Adhered cotton cloth, Cellulosic surface, Immobilization, Urea effluent, Frame reactor, 935
Ureolytic cells
Urease, Flocculate, Adhered cotton cloth, Cellulosic surface, Immobilization, Urea effluent, Frame reactor, 935

Vapor
Enzyme, Lipase, *Candida rugosa*, Esterase, Hydrolysis, Water activity, Thin Film, Gas, 370
Variable pathlength turbidimeter
Fermentation, Biomass, 450
VFA
Clostridium acetobutylicum, Solvent analysis, GC, ABE, Fermentation, 722
Viability
Active dry yeast, *Saccharomyces cerevisiae*, Fermentation kinetics, Specific growth rate, Specific production rate, Solid-state fermentation, 2
C. roseus cells, Immobilization, Growth, Carbon dioxide, Respiration, Conductivity, 882
Vinegar
Dates, *Saccharomyces cerevisiae*, *Acetobacter aceti*, Ethanol, Acetic acid, Membrane bioreactor, 257
Vitreoscilla hemoglobin
Escherichia coli, Partitioning, Extraction, Purification, 788
Volatile acids
Biomass, Spentwash, Distillery waste, Carbon dioxide, 179
Volatile fatty acids
Rumen microorganisms, Kinetics, Methane, 925

Water activity
Enzyme, Lipase, *Candida rugosa*, Esterase, Hydrolysis, Thin film, Vapor, Gas, 370
Whey permeate
Lactic acid, *Lactobacillus helveticus*, Cell-recycle reactor, 811
White rot
Ligninolysis, Lignin peroxidase, *Phanerochaete chrysosporium*, 15
Wool grease
Esterase, Lipase, Cholesterol esterase, *Pseudomonas*, *Acinetobacter*, Wool-scour effluent, 740
Wool-scour effluent
Esterase, Lipase, Cholesterol esterase, *Pseudomonas*, *Acinetobacter*, Wool grease, 740

X-ray analysis
Triacylglycerol hydrolase, Lipase, *Geotrichum candidum*, Microheterogeneity, Glycosylation, Substrate specificity, Crystallization analysis, 840
Xylan
Anaerobes, Cellulase, Xylanase, Xylose, 430
Xylanase
Acetyl-4-O-methylglucuronosylan, Xylooligomers, Acetyl xylan esterase, Pulsed amperometric detection, 483
Anaerobes, Cellulase, Xylan, Xylose, 430
Xylooligomers
Acetyl-4-O-methylglucuronosylan, Xylanase, Acetyl xylan esterase, Pulsed amperometric detection, 483
Xylo-oligosaccharides
Clostridium thermolacticum, Endoxylanase, Corncob xylan, Arabino-xylo-oligosaccharides, 617
Xylose
Anaerobes, Cellulase, Xylan, Xylanase, 430
Pichia stipitis, Diauxie, Ethanol fermentation, Oxygen limitation, Model, 648
Pichia stipitis, Diauxie, Flocculation, Ethanol fermentation, 734
Pichia stipitis, *Saccharomyces cerevisiae*, Diauxie, Immobilization, Ethanol fermentation, Model, 530
Pichia stipitis, *Saccharomyces cerevisiae*, Ethanol fermentation, Diauxie, Reactors in series, 828

Yeast
Biotransformation, Enzymes, Enantioselectivity, Methylketones, *Saccharomyces cerevisiae*, 817
Cell wall, Mechanical cell disruption, Protein excretion, Invertase, Glucose-6-phosphate-dehydrogenase, 665
Ethanol bioreactor, Ethanol production, Continuous ethanol production, Continuous fermentation, Aerated fermentation, Immobilized cell reactor, 390
Yeast cells
Coimmobilizate, Polyethylenimine, Glucose oxidase, Cotton thread, Adhesion, 508
Yeast cell-wall glucan
(1-3)-β-Glucanases, *Aspergillus niger*, 87
Yeast lysis
β-1,3-Glucanase, Protease, *Oerskovia xanthineolytica*, 71
Yeast reduction
Enzyme inhibitor, Stereochemical control, Ethyl 3-oxobutanoate, Ethyl (S)-hydroxy-butanoate, 834

Zymomonas mobilis
Gluconic acid, Sorbitol, Invertase, Oxidoreductase, 920
α-Zeralenole
Bakers' yeast, Reduction, Diastereoselectivity, α-Zeranole, 344
α-Zeranole
Bakers' yeast, Reduction, Diastereoselectivity, α-Zeralenole, 344